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USSR Report

CONSTRUCTION AND RELATED INDUSTRIES



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CONSTRUCTION PLANNING AND ECONOMICS

MATERIAL SHORTAGES, MISMANAGEMENT PLAGUE DZHAMBULKHIMSTROY PROJECT

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 11 Apr 85 p 2

[Article by A. Iseyev, contributing correspondent, Dzhambul Oblast: "Where Everyone's Responsible, No One's Responsible"]

[Text] Dzhambul District has become a region of large-scale chemical industry. Each year sees additions to the productive capacity of the Karatau-Dzhambul Territorial-Industrial Complex. Much has already been constructed, and other construction projects are under way. However, the construction of some facilities is not proceeding as it should. Delays are being caused by malfunctions of the construction management mechanism. The problem is that the activities of the construction collectives are not being coordinated properly. The prevailing philosophy is to live one day at a time. The major link is not always engaged in the overall chain of construction problems. The leadership system is not meeting the demands of the day. "Backsliding" of this type is no stranger at the construction of the Karatau Chemical Plant.

The purpose of this future enterprise is to manufacture pellets of crushed phosphorite ore extracted on the site. The first phase of the plant--a pellet factory designed to produce 2.1 million metric tons of ore pellets per year--is supposed to come on line in 1987.

This plant has been under construction since 1982 by the Karatau Phosphorite Construction Trust [Karataufosforstroy], the general contractor, and the Dzhambul Chemical Construction Trust, subcontractor. Also participating are units of the Kazakh Chemical Construction Trust (Kazkhimmontazh), the Kazakh Steel Construction Trust [Kazstalkonstruktziya], and the Kazakh Chemical-Electrical Construction Trust [Kazkhimelektromontazh]. The Central Board of the Karatau Chemical Construction Trust, of the Ministry of Heavy Construction of the Kazakh SSR, is charged with the overall management and coordination of the activities of the construction mechanism.

Where does the construction stand today? Unfortunately, the plans for construction projects from year to year are not being fulfilled. There are a variety of reasons: interruptions in the delivery of construction materials, inflexibility of the individual construction organizations and their directors, and poor labor discipline. There is also some disagreement among the trusts of the Main Administration regarding construction. Furthermore, the Ministry

of Heavy Construction of the Kazakh SSR cannot be accused of overattention to the matter. There is consequently discord in subordination and coordination. These and other factors are delaying the pace of construction, so it is uncertain whether the first phase will be completed on schedule.

There are, on the other hand, some positive happenings at the construction site. The construction brigades of the Dzhambul Chemical Construction Trust have organized their labor in shifts. Specifically, two shifts are working. Many of the brigades are highly productive; as an example, we might cite I. Afanasiadi and Yu. Mikaylova, who are working by the method of a complete production-line brigade contract. These collectives are erecting the basic framework of the pellet factory. Brigades of the Dzhambul Chemical Construction Trust are working highly productively. Since the beginning of the year, fitters of Dzhambul Construction Control No. 1 of the Kazakh Steel Construction Trust have been brought into the project.

Nevertheless, the overall rate of work could be higher. The reason for the present situation is not surprising. The trust which is the general contractor is not only failing to take the necessary initiative but is in fact itself at the tail end of completing the construction plan for 1984, lagging far behind Dzhambul Chemical Construction. Here is a typical example: Last year, the Trust broke off the installation of boilers in the boiler room and did not start construction of the administrative and personnel facilities. The reason for the disruption is simple: There were more important matters and all effort was directed there.

This disposition of forces does not disturb the Central Board of the Karatau Chemical Construction Trust. Furthermore, this situation is becoming standard operating procedure: a management system to which the trust adheres extremely stubbornly.

Whether the directors of the Karatau Phosphorite Construction Trust like it or not, at the initiative of the Main Administration the general contractor distances himself further every day from the construction of the Karatau Chemical Plant. This year, six million rubles--less than last year--has been allotted to the Trust for construction installation at the site. The Dzhambul Chemical Construction Trust, in contrast, has seen its program doubled to 20 million rubles. The motivation is the same as before: The Karatau Phosphorite Construction has been assigned start-up projects at Zhanatas and other places. To make up for the absence of a general contractor, the Dzhambul Chemical Construction Trust is devoting a bit more effort to the Karatau Chemical Plant. Why this rearrangement? Why move everything and everybody from Dzhambul to Karatau, while the local trust is transferred tens of kilometers to start-up projects? Fine, the start-up projects need attention, but wouldn't it be possible to free the general contractor from secondary projects without draining away its resources, so it could devote all its attention and efforts to its present project? To what extent this is necessary can be seen from the level of capital investment. More than 300 million rubles has been budgeted for the completion of the first phase.

Not much time remains before the plant is to be started up. However, the general contractor is still not giving its baby the attention it needs. Such coordination of the efforts of two trusts in the construction of the Karatau Chemical Plant understandably causes some bewilderment. How can the Karatau Phosphorite Construction Trust have any influence on the subcontracting organizations when it itself is a little more than a guest at the construction site?

Also unclear is the strategy of the Main Administration of the Karatau City Party Committee. In these conditions the Party Committee cannot exert any real influence on matters at this or other construction sites. The plant is basically being constructed by construction organizations which are coming in from Dzhambul, while the start-up projects of the Karatau Phosphorite Construction Trust are being carried out by collectives moved in from Zhanatas. The traveling of the general contractor to the projects at Zhanatas and the traveling of the Dzhambul Chemical Construction Trust to the projects of the general contractor serve no useful purpose whatsoever except to unnecessarily complicate the situation. Furthermore, the traveling does not serve the main interests of large construction. Is there some point to this traveling? This method of construction is not approved in the Karatau City Party Committee, the Dzhambul Chemical Construction Trust, or the management of the Karatau Chemical Plant.

One inconvenience is that the construction base of Dzhambul Chemical Construction is at the oblast center. In the summer of last year there were interruptions in the delivery of precast reinforced concrete--production facilities were lacking. The trust was forced to construct its own concrete unit. However, even this unit was no help: Another had to be built this year. The problem, however, still remains unresolved. Neither the general contractor nor the Main Administration nor the Ministry of Heavy Construction of the Kazakh SSR answers for the situation regarding the construction of a construction-industry base for the construction organizations of the plant. In principle, this question has been resolved in both Moscow and Alma-Ata at the levels of the general customer and the corresponding construction ministries. Corresponding agreements have been signed. However, there is no construction industry base.

This work should have been begun two years ago. However, it is still not settled. The director of the trust, B. Litvin, cites the absence of blueprints in connection with the reconstruction of the Karatau Integrated Structural Materials Factory. When the drawings will be available is not known. Incidentally, the additional facilities for the Karatau Phosphorite Construction Trust are pointless. As the situation stands today, what's available is already sufficient.

For all the projects which are part of the construction, according to A. Grishin, deputy director of the Karatau Chemical Plant under construction, the finances have been open since November 1983 except for projects of the construction industry, because of an absence of design-budget documents. This year, the Ministry of the Production of Mineral Fertilizers allotted a million rubles to the reconstruction of the Integrated Structural Materials

Factory of the Karatau Phosphorite Construction Trust. However, it has not yet been started. There are no working blueprints. Five hundred thousand rubles have been allotted to the construction of the control base of Kazakh Chemical Construction. However, this is another project which is not being constructed, although both money and drawings are available. Apparently, concludes A. Grishin, neither the Karatau Phosphorite Construction Trust nor the Main Administration of the Karatau Chemical Construction needs a construction industry base.

This is still not the end of the construction problems. The management of the plant under construction is presently in a state of total confusion. There is absolutely nothing available in the way of design documentation for a single nonproduction service facility. Yet there are plans to begin construction as early as next year. The total capital investment is 63 million rubles.

The management is presently attempting to obtain plans for buildings for a nonseismic zone such as the territory around Karatau. Such plans require 30 percent less in capital investment. Consequently, more can be constructed. However, there are no plans. When they will be available is not known. Kazakh SSR Gosstroy workers must give assistance here, since the Ministry of Heavy Construction of the Republic is not able to cope with this project in a timely way. After all, the cost of the construction-installation work is 53 million rubles.

Only in this case will it become possible to pursue the construction work next year on residences and projects of socialist culture and lifestyle. When the enterprise can be brought on line depends on how soon these problems are resolved.

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IMPROVING ORGANIZATIONAL FORMS OF ADMINISTERING CONTRACT CONSTRUCTION

Moscow EKONOMIKA STROITELSTVA in Russian No 9, Sep 85 pp 12-20

[Article by V.A. Balakin, candidate of economic sciences: "To Improve Organizational Forms of Administering Contract Construction"]

[Text] In the time that has elapsed since the issue of the decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning, Organization and Management of Capital Construction," definite work has been accomplished in construction ministries and contracting organizations of sectorial ministries, departments and union republics on implementing its positions. This has resulted in a certain improvement in their operation. At the same time, little as yet has been done on the basic directions of improvement of contract construction. This particularly applies to the preparation and practical realization of general, departmental and regional schemes of managing construction. A correct assessment of the special features of the state and tendencies of long-term development as a whole and of taking into account subsectorial and regional conditions is important in improving the organizational structure of contract construction.

In terms of the volume of capital investment utilized annually, our country occupies first place in the world. Thus, solely in 1984, state and cooperative enterprises and organizations, kolkhozes and the population put into operation fixed capital in the amount of 170.9 billion rubles, that is, almost as much as was used throughout the entire 6th Five-Year Plan. Constant growth of capital-construction volume requires corresponding, and at the same time, outstripping development of all sectors of the construction complex.

A number of special features are characteristic of the investment process at the present time. They exert a determining influence on the organizational forms of construction production management.

As we know, a characteristic trait of the present stage of economic development is intensification of the programmed method of management. In recent years, there have been developed special-goal and complex developmental

programs of individual sectors of the national economy and industry as well as of regions of the country, with construction targets constituting an integral part of it.

One of the basic problems of making up capital-construction plans under these conditions is correlation of targets designated in approved programs with the realistic possibilities of their resource provision and with the capacities of construction organizations while taking into account their development. It is especially important to determine from national-economic positions priorities of construction order and to ensure timely growth of construction organizations' capacities to the size required for the solution of the tasks facing them.

Still in former 5-year plans, the country embarked on the fulfillment of large-scale construction programs connected with the construction and development of a number of new large regional production complexes (TPK). They include those such as the Western-Siberian and Kansk-Achinsk regional production complexes and the zone of the Baykal-Amur Railroad Mainline. During the current 5-year plan, more than 40 percent of all capital investment will be allocated for the creation and development of regional production complexes.

In the case of extreme insufficiency and in a number of cases of total absence of construction organizations' capacities and their production base, weak development of the infrastructure and large shortage of manpower resources, it will be necessary to create in a short period of time new large construction organizations capable of ensuring the fulfillment of tremendous construction programs.

There should be added to this that many new enterprises not included under regional production complexes now present a combination of a number of related production operations united into large industrial units whose construction requires the execution in each case of a significant construction program.

By now a certain experience has been acquired in the country in management and organization of construction in large units and zones of its concentration and in the forming in a short period of time of collectives of builders with an appropriate production base. Mistakes, miscalculations and defects have also been revealed in carrying out these large-scale tasks. However, problems requiring solution still remain. Correct assessment of the indicated problems is of major importance for concretization of long-term directions of work.

Without a doubt, the patronage aid of republics, krays, oblasts and the cities of Moscow and Leningrad in the construction of the Baykal-Amur Railroad Mainline and in Western Siberia has well proved itself. It is particularly important in the initial stage of construction when capacities are insufficient among the principal general contractors and their production base is weak. Naturally, in such a case, outlays connected with the transportation of components and materials required for construction are great. But as long as the required capacities are lacking in the construction area, these outlays are justifiable.

At the same time, under these conditions the pressing task of accelerated creation of a production base at the site must not be diminished: accelerating construction and assimilation of capacities of enterprises of the construction industry in newly developed regions must be a most important priority direction in the work of construction organizations during this period.

Unfortunately, in practice another attitude is to be found in the solution of these problems. Thus, the construction of production enterprises of the USSR Ministry of Transport Construction on the Baykal-Amur Mainline has been lagging and capacities of the construction industry of the Ministry of Construction of Petroleum and Gas Industry Enterprises, the Ministry of Transport Construction and particularly the USSR Ministry of Industrial Construction in Western Siberia are developing slowly. As a result, considerable sums are being spent on delivery of construction components and parts to the regions under construction, the cost is rising and the construction time of facilities is growing longer.

Accomplishment of the large construction programs relating to the creation of regional production complexes brings up the problem of more efficient organization of their implementation. These programs, as a rule, initially have a clear-cut sectorial direction and are carried out by organizations of specialized construction ministries (USSR Ministry of Transport Construction, USSR Ministry of Construction of Petroleum and Gas Industry Enterprises and USSR Industry of Power and Electrification).

Their accomplishment is connected to the fulfillment of work in the complex with construction of facilities of other sectors of the production sphere and of the nonproduction type. As a result, a situation emerges in which specialized organizations become "overgrown" with these operations to the detriment of fulfillment of specialized work of their type in other regions of the country. A possible alternative solution to this problem should be considered either as transfer of this work to appropriate general construction contracting organizations or (taking into consideration the tremendous volume of construction in the country) the creation in this region of an independent, organizationally detached, system of general construction organizations.

Similar problems arise with the employment of powerful construction organizations following construction completion of large production complexes. Such construction organizations set up for the performance of special-purpose tasks with an appropriate production base possess a high level of inertia and following realization of these tasks "push through" decisions on construction of new enterprises in the zones of their activity despite the fact that, considering other economic factors, this is not always effective.

With respect to these questions, recommendations cannot always be identical in all cases. But it is impossible not to take into consideration that the special features of capital construction at the present stage require the development of appropriate decisions in management of the construction complex and greater mobility in construction. The traditional approach to the solution of these questions does not ensure attaining the required result.

Another feature of the investment process at the present time is a significant change in the reproduction and technological structure of capital investment. The conversion of the economy to a primarily intensive path of development presupposes an advancing growth of capital construction volume aimed at the reequipping and modernization of existing enterprises and an increase in the share of outlays on equipment.

In the four years of the current 5-year plan, outlays on reequipping and modernization have increased 42 percent compared to the corresponding periods of the 10th Five Year Plan and amounted in 1984 to more than 34 percent of the total volume of capital investment. As pointed out at the conference on questions of acceleration of scientific and technical progress held 11-12 June of this year at the CPSU Central Committee, the share of capital allocated for modernization should be raised at the very least to half in the immediate years ahead of the total volume of capital investment.

The relative share of outlays on equipment in the total volume of capital investment for facilities of the production type amounted in 1970 to 40 percent, in 1975 to 42 percent, while in 1984 it grew to 48 percent.

Reequipping and modernization of existing enterprises and production operations on the basis of the latest equipment and technology must become the basis of growth of production capacities both for the immediate years ahead and also for the long term. In this connection, it is necessary to create conditions interesting all participants of the investment process in maximum development of this direction of capital investment.

This special feature of the investment process will result in definite changes in the planning and performance of contracting work. The fact here is that in outlays on reequipping the share of construction work is significantly smaller than in new construction, while in the composition of the latter a major share belongs to work relating to installation of new equipment. At the same time, the final result depends increasingly less on the general-construction organization and, consequently, the functions of general contractor bestowed on it will hardly always be valid. It is possible for the installation organization, the industrial enterprise itself or the head supplier of equipment to serve as general contractor in reequipping. The latter is all the more legitimate because in increase of the degree of saturation with equipment and large technological installations of modern enterprises being built, the role of enterprises and organizations engaged in their delivery, installation, adjustment and bringing up output to projected parameters grows immeasurably.

A comparable revision is required of contractual relationships between parties and increase of their responsibility for the fulfillment of mutual obligations. Of special major importance are questions of timely and complete delivery of basic technological equipment coordinated with schedules of completion of construction and installation work.

Simultaneously with the indicated changes in the investment process, changes occur in the regional structure of capital construction connected with the accelerated development of the country's northern and eastern regions where

even without it a shortage of capacities of construction organizations is felt and their production base is weakly developed.

One of the important questions of capital-construction development is the development of a valid conception in regard to the economic method of construction. The general direction, beginning in the '30s was an all out transition to the contract method and a corresponding increase of its share in the total volume of construction and installation work. In the 9th Five-Year Plan, it already amounted to about 90 percent. In subsequent years, the relative share of construction and installation work performed with the own resources method practically stabilized.

Such a situation must not be considered fortuitous nor particularly to assert that the cause of this is inadequate capacity of contracting construction organizations. Experience shows that in engaging in work on reequipment and modernization under conditions of operating production the own resources method is more effective than the contracting method in a number of cases, especially with small volume. Consequently total curtailment of the own resources method is hardly justified. But planning volume of work to be completed by the own resources method as a remainder of the limit of construction and installation work undistributed among contractors is also wrong.

Determination of the feasibility of performance of construction and installation work by the contract or own resources method, especially in reequipment and modernization should be based on their comparative effectiveness under specific conditions. At the same time, the material and technical support of contracting organizations and enterprises conducting work with the own resources method should be done according to standard norms.

Regional contracting organizations that have the functions of head construction organizations are obliged in the zone of their activity to provide enterprises carrying out work with the own resources method necessary construction components and parts based on their orders. Fulfillment of commitments for these deliveries should be considered on an equal footing with the fulfillment of the prescribed plan of construction and installation work for the contracting organization. The same conditions must be created in regard to renting construction equipment of provision of services for mechanization of construction and installation work.

Growth of the volume of capital construction has been due to the establishment of contract construction as a major independent sector of the national economy.

The basic volume of contract construction is performed by four general construction ministries (USSR Ministry of Heavy and Transport Building, USSR Ministry of Industrial construction and Minvostokstroy [Ministry of Construction in the Far East and Transbaykal Regions (?)]) and four specialized construction ministries (USSR Ministry of Installation and Special Construction Work, USSR Ministry of Construction of Petroleum and Gas Industry Enterprises and USSR Ministry of Rural Construction), each of which is a large organizationally independent system.

General construction ministries were formed and have been functioning for a considerable time on the regional-sectorial principle. At the present time, production construction for many territorial regions does not possess a permanently clearly expressed sectorial structure, and the regional principle is increasingly more prevalent in the operation of contract construction among general construction ministries. This position was incorporated in the decree of the CPSU Central Committee and the Council of Ministers of 29 April 1984 "On Improving Planning, Organization and Management of Capital Construction." It specified that in oblasts, krays, autonomous republics and union republics not broken down into oblasts, construction should be carried out as a rule by the organizations of a single general construction ministry which is charged with fulfillment of work for all the clients of the given region (with the exception of work assigned to specialized ministries).

In addition to strengthening the role of chief regional administrations of general construction ministries as head regional organizations in management of construction, specialization is systematically carried out of their construction and installation trusts which engage in work in hubs of construction concentration of enterprises of the corresponding sectors of industry in accordance with the sectorial principle.

In addition to the aforesaid general construction and specialized ministries, large systems of contracting construction and installation organizations are to be found in such sectorial ministries as the USSR Ministry of Power and Electrification, the USSR Ministry of Land Reclamation and Water Resources and the USSR Ministry of Coal Industry, while more than 25 percent of the total volume of construction and installation work is done by contracting organizations that are under practically all the other sectorial ministries and union republics.

Thus, a characteristic feature of contract construction as a sector of the national economy is organizational disconnection of individual systems of contracting organizations.

For this reason, one of the most important developmental problems of contract construction in our opinion should be considered strengthening of planned centralized operation of this sector while ensuring the necessary economic independence of the construction organizations. Particularly pressing is strengthening of centralization in management of construction for base sectors of the national economy and industry. At the same time, expansion of rights is needed with obligatory increase of the responsibility of union republics and local organs in management of nonproduction construction and of construction for a number of sectors of the agroindustrial complex and enterprises relating to production of consumer goods and of local industry.

In the last and present 5-year plans, a number of negative factors were disclosed that were due to defects in the existing organizational structure of management in contract construction. First of all, it is necessary to point out a slowing down of the process of concentration of construction production among the principal construction ministries and the creation of a large number of new, as a rule, small contracting organizations in sectorial ministries at

times acting in parallel with contracting organizations of construction ministries.

The yearly volume of contracting work performed on the average by a single construction and installation trust had grown in 1975 by 18 percent compared to 1970 and only by 1.5 percent in 1980 compared to 1975. During the current 5-year plan, a certain reduction has actually taken place in the performance of volume of work by a single trust. Since 1975, the average capacity of a construction administration has practically remained unchanged. The number of construction administrations and organizations equated with them increased by 10.6 percent during the last 5-year plan at construction ministries and the USSR Ministry of Power and Electrification and by 44.4 percent in USSR sectorial ministries and departments. Questions of creation of new organizations and capacity growth of existing ones were decided as a rule on the basis of departmental interests.

As shown by the results of analysis of reporting data and calculations of specialists, trusts with an annual volume of construction and installation work of no less than 20-25 million rubles have unsatisfactory indicators of production operational and financial activity. It should also be kept in mind that it is practically impossible to implement new methods and conditions of management in small organizations.

A necessary prerequisite of further improvement of management of contract construction ought to be the process of steady amalgamation of construction and installation organizations. This work cannot be limited by measures connected since 1985 with the introduction of new indicators for including construction and installation organizations under groups based on work earnings of supervisory and engineering and technical personnel which are on the average up to 60 percent higher than formerly in effect (in this connection, it should be kept in mind that approximately 20 percent of the increase is made up of change in the level of prices introduced as of 1 January 1984).

In accordance with the above-mentioned decree of the CPSU Central Committee and the USSR Council of Ministers of 29 April 1984, a complex of measures is to be carried out for increasing the role of construction and installation trusts as the basic cost-accounting unit of management of construction production and creating necessary conditions for unconditional fulfillment by each trust of plan targets for putting into operation production capacities and facilities, growth of labor productivity, profit and reduction of production cost of construction and installation work and other economic indicators.

The construction and installation trust should be an organization capable as a rule of independently solving problems relating to construction of production capacities and facilities while taking into account the attained level of division of labor. In this connection, it should include not only construction subdivisions but also subdivisions for production and technological equipment, mechanization and operation of motor transport and other auxiliary and service operations depending on the specific nature of the work performed by the trust, the regional dispersion of facilities being built

and other factors determining the organizational structure of management in the trust, the basic cost-accounting unit of management. At the same time, in planning the trust structure, it is necessary to approach it from the position of rational specialization of production and cooperation with other construction organizations and effective combination with all participants of the construction complex.

The rise in the efficiency of construction production is connected with the development and deepening of specialization. The relative share of work performed by specialized organizations amounted to 58 percent in 1970, and by 1980 it had grown to 63 percent. But in recent years, the specialization process has slowed down. At the same time, the nature of the process of division of labor in construction production attests to the necessity and presence of objective developmental preconditions for all types of specialization: sectorial, facility and technological. Sectorial specialization has developed most in transport, pipeline and power construction at the level of the corresponding specialized ministries and their structural elements. Conditions were created for the further development of sectorial specialization in construction of facilities for ferrous and nonferrous metallurgy, the chemical and petrochemical industry and a number of other sectors, which should be carried out at the level of trusts (or their subdivisions) of main construction administrations of general construction ministries with cooperation (and possibly with resubordination) with appropriate specialized installation organizations of the USSR Ministry of Installation and Special Construction Work.

Objective conditions dictate the pressing necessity of development of facility specialization for certain types of constructed buildings and structure and especially technological specialization in the performance of homogeneous types or complexes of construction, installation and specialized work. Obviously, division of the functions of organizations of general construction ministries and specialized organizations of the USSR Ministry of Installation and Special Construction Work requires a certain amount of revision. It is necessary to increase the share of work performed by organizations of the specialized ministries, the USSR Ministry of Transport Construction, the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises and the USSR Ministry of Power and Electrification in the case of construction of facilities for all sectors of the national economy and industry in regions where the type of work of these ministries predominates.

The experience of organization of construction of a number of large industrial enterprises, including, for example, the Astrakhan Gas Condensate Complex, the Oskolsk Electrometallurgical Combine, large nonferrous metallurgical enterprises and industrial complexes belonging to most regional production complexes, convincingly proved the feasibility and effectiveness of wide-scale involvement of organizations of the said ministries in the construction of corresponding facilities. This by no means upsets the specialization of organizations of the USSR Ministry of Transport Construction, the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises and the USSR Ministry of Power and Electrification. On the contrary, its further development and deepening occur as a natural process of division of labor in construction production. Naturally, corresponding forms of organization of

management of construction have to be developed. Its participants are organizations of different ministries and departments. The practical experience available in this unfortunately has not received proper generalization and scientific validation.

Raising the level of construction industrialization and the process of greatest possible carryover of production to plant conditions and the conversion of the construction site to a place of assembly of buildings and structures from blocks, components and integrated parts of a high level of availability have been responsible for the combining development in construction. Combining of industrial and construction production has been shown most consistently in housing construction in the form of creation of house-building combines. This made it possible to significantly speed up the rate of housing construction, to reduce time periods and lower the cost of constructing residential buildings. Rural construction combines have been definitely developed. In the aforesaid spheres of construction, large reserves exist for raising efficiency in combining industrial and construction production.

But this progressive form of construction organization has not received the necessary development in production construction. At the same time, the attained level of industrial construction of components for industrial buildings and structures is a sufficient condition for the creation of corresponding combines. A good example of this is Sibkomplektmontash Production Association. It is a unique form of combining industrial and construction production in the Main Administration for Bridge Construction of the Ministry of Transport Construction, which could be further developed within the framework of appropriate subdivisions for the industrial production of span structures of bridges and their installation or consolidating assembly at the site. Development of combining industrial and construction production should be considered particularly urgent in work relating to installation of technological, power and engineering equipment.

As was pointed out above, the active process in recent years of creation by sectorial ministries and departments of their own contracting construction and installation organizations has led to the operation on the territory of most administrative units (in the kray, oblast or rayon) of parallel functioning organizations with their own production bases. The shortfalls and economic damage borne by the country's economy as the result of such development of contract construction has been repeatedly pointed out in the special and general press. It follows from this that intensification of centralized management of contract construction should be done not only on a scale of the whole economy but also within the regional framework.

Taking into consideration specific regional features, the said problem can be solved by subordinating all contracting organizations (with the exception of specialized construction ones) to a single managerial organ or in the form of increased role and responsibility for the construction organization carrying out the main volume of construction in the region and the imposition on it of the functions of chief regional organ of construction management. For the practical realization of the second direction, proper determination and

regulation of the functioning of the chief regional organ of construction management is of major importance.

The examined developmental features of capital construction require the solution of the problem of increasing the mobility of contracting organizations. But this problem cannot be reduced solely to the construction of line and small regionally dispersed facilities or to the construction of individual weakly developed in an economic sense regions of the country. At the present time rich experience has already been acquired in the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises, the USSR Ministry of Power and Electrification, the USSR Ministry of Transport Construction and the USSR Ministry of Rural Construction of construction organization of line installations of large length and dispersed facilities with the use of mobile organizations.

The problem of mobility of construction capacities within the limits of a single oblast or even rayon is particularly pressing. Its solution will make it possible to get rid of "peak" loads occurring during certain periods of construction of facilities. The existence of such overloads sometimes result in an unfounded conclusion of inadequacy of production capacities of contracting organizations: the situation frequently occurs where in the case of inadequate capacities of contracting organizations at a given new place of construction they are underloaded in other regions.

The inertia of the system of construction organizations and of their production bases (keeping in mind their immobility) serves as a restraining factor in the development of a number of sectors of the national economy and industry. Mobile associations created in general construction ministries with minor exceptions have not fully justified the hopes placed on them. Clearly, it is necessary to work out an integrated system of organizational, technical, economic and juridical measures aimed at increasing mobility in construction production and also to accelerate working up of normative documents regulating the organizational forms of mobile organizations, statutes determining their structure, rules and obligations, special features of remuneration of labor and interrelation with other construction participants.

Growth of the scale of capital construction and development of contract construction have brought about the formation of such industrial sectors as the construction materials industry, construction and road machine building and the industry of construction components and parts.

The construction materials industry and construction and road machine building are basically developing in the context of independent organizationally separate sectors, although a significant volume of corresponding production is put out by industrial enterprises of the construction ministries.

The industry of construction components and parts was essentially formed and continues to develop in the systems of construction ministries. As a result, organizational dissociation is characteristic for this sector of industry as well as for contract construction as a whole. This creates difficulties in managing it, since as in any industrial sector pertinent questions have to be resolved with a combination of centralized administration (for example,

provision of a single technical policy, development and location of enterprises, cooperation of production and the like) and economic independence.

For this reason, when developing measures for improving management of contract construction, questions of improving management of the industry of construction components and parts have to be taken into account. Economic damage from the creation of parallel operating production enterprises and small production operations with incomplete use of capacities and high production cost as well as in connection with significant irrational and cross hauls of construction components because of departmental disconnection of enterprises in regard to their production is particularly felt at the present time. First of all, it is essential to provide maximum possible centralization of enterprises of the construction industry for the pertinent region and also to introduce forms of product distribution stemming from this centralization.

Positive experience has been acquired at many construction organizations of effective management solutions. Thus, a complex approach to acceleration of introduction of scientific and technical progress into production at all stages, beginning with scientific development and planning, is being successfully realized by bridge builders at the Ministry of Transport Construction. At the Ministry of Construction of Petroleum and Gas Industry Enterprises, a big economic effect has been achieved on the basis of a systematically introduced program of improving organizational forms of management of a complex technological flow to the ministry through reduction of the construction time of arterial gas pipelines. A number of statutes have been effective on the organization of construction management at the Astrakhan Gas Condensate Complex, the Oskolsk Electrometallurgical Combine and other large construction projects.

Construction ministries have attained definite successes in construction management at construction and installation subdivisions as well as at enterprises of the construction industry which have been designated exemplary in the use of new equipment, advanced technology, comprehensive mechanization of construction, economy of material resources, securing of high labor productivity and standards, high quality of work and introduction of advanced domestic and foreign experience in work production.

It is important for these questions to be properly generalized and find corresponding reflection in construction management schemes.

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CSO: 1821/81

INDUSTRIAL CONSTRUCTION

PARTY OFFICIALS ADDRESS WEST SIBERIAN CONSTRUCTION PROBLEMS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Sep 85 p 1

[TASS Article: "In the CPSU Central Committee"]

[Excerpts] On 27 September, a meeting was held in the CPSU Central Committee for the secretaries of the central committees of communist parties of union republics, oblast and municipal party committees and the leaders of ministries and departments and a number of territorial construction organizations, during which an examination was undertaken of those problems concerned with carrying out the ever increasing program of capital construction associated with implementation of the decrees of the CPSU Central Committee and the USSR Council of Ministers on the development of the west Siberian petroleum-gas complex during the 1986-1990 period and the decisions handed down based upon the trip by the General Secretary of the CPSU Central Committee M.S. Gorbachev into the regions of western Siberia.

The attention of the leaders of the party, soviet and economic organs was directed to the serious lag that has developed in housing and social-domestic construction. The shortages in housing, schools, kindergartens, hospitals, polyclinics, dining halls, stores, movie theatres and other installations are having an adverse effect with regard to the retention of personnel in this region and the formation of stable labor collectives.

During this meeting, special emphasis was placed upon the fact that the chief and in many instances the only means for carrying out the vast construction program lies in making maximum use of the achievements of scientific-technical progress and accelerating it in all respects in construction matters.

The recommendation has been made to have the ministries and departments undertake urgent measures aimed at strengthening and developing the industrial base for construction and the construction materials industry and supplying them with highly productive equipment capable of performing in a reliable manner under the conditions found in the Far North. The scale of completely prefabricated housing construction must be expanded and the degree of plant readiness of construction structures and parts raised. To introduce complete-unit methods to the maximum possible degree for the installation of drilling units and the erection of production installations; this will make it possible to lower substantially labor expenditures at construction sites and to shorten the amount of time required for mastering new oil and gas deposits.

USSR Gosstroy and Gosgrazhdanstroy have been assigned the task of improving the general plans for cities and settlements. They must take into account more fully the local conditions and features. The architects, planners and builders have been tasked with raising the quality of their building systems and architecture, in the interests of ensuring that the buildings are suitable for habitation, economical, have modern apartment lay-outs and retain heat in a reliable manner.

A great amount of attention was given to ensuring that the union republics, oblasts and cities carry out the tasks concerned with the construction of housing and installations of a social-domestic nature, automobile roads and with the production and delivery of structures, products and materials to construction projects in western Siberia. A recommendation was made calling for the creation, as rapidly as possible, of new construction organizations and the strengthening of existing ones and ensuring that they are staffed with skilled personnel and that constant control is exercised over their operations. The specific results realized from carrying out the tasks aimed at developing the oil and gas complex will be viewed as an important criterion when evaluating the work of the ministries, departments and local party organs.

7026

CSO: 1821/98

INDUSTRIAL CONSTRUCTION DESIGN FOR EAST SIBERIA

Moscow PROMYSHLENNOYE STROITELSTVO in Russian No 12, Dec 85 pp 17-21

[Article by O.S. Butayev, Candidate of Architecture at the Central Scientific Research, Planning and Experimental Institute of Industrial Buildings and Structures: "Characteristics of Architectural-Artistic Solutions for Industrial Buildings for Regions of Eastern Siberia"]

[Excerpts] A most important task of architectural planning is that of economizing in the use of heat. The correct solution for this task lies in finding efficient types of buildings which at the same time are artistically unique.

The most radical means for reducing heat losses in buildings, lowering the cost of construction and achieving a savings in fuel-energy expenditures consists of blocking, which must be employed to the maximum possible degree throughout Siberia. From among the successful works erected in this region, we would like to single out the Minusinsk Electrical Engineering Complex, a construction project consisting of large 2-story buildings, each of which contains several individual plants.

Under modern practice, we encounter frequent incidents of use being made of multiple-story buildings and blocking carried out mainly on flat land, as a result of which the blocked buildings occupy a gigantic portion of the building area. It is sufficient to mention the main buildings of VAZ /Order of Red Banner of Labor Volga Automobile Plant imeni 50th Anniversary of the USSR/ -- 73 hectares, KAMAZ /Kama Automobile Plant/ -- 40 hectares and others.

An important factor with regard to construction in the north is the need for increasing the degree of prefabrication and industrialization of buildings and reducing to a minimum monolithic reinforced concrete operations, brick laying and wet plastering. However, these types of work are still being employed considerably in many plans for industrial buildings. Protective structures made out of sheet metal and an effective heater are being employed only rarely. The principal wall material for industrial buildings in the region continues to be horizontal concrete panels.

In almost all areas in this zone, an inspection of industrial buildings reveals on the facades icing in the seams of these panels and in the window units. This ice forms as a result of imperfections in the structures of the joints and

also in the methods employed for filling in the seams. Under northern conditions, a joint serves as a powerful means for cooling off facilities.

A laboratory for full-scale studies at TsNIIpromzdaniy /Central Scientific Research, Planning and Experimental Institute of Industrial Buildings and Structures/ has established the fact that heat losses through the wall of a building in the area of a horizontal joint (for .3 meters on both sides of the joint) are 32 percent higher, and in the zone of a vertical joint between panels, on a strip .7 meters in width (in the area where the wall is joined by a column), they are 45 percent higher than that for a smooth wall surface.

Of other adverse phenomena which can be observed in a view of Siberian buildings, mention should be made of the destruction of the protective layer of wall panel fittings (which is associated with great changes in the daytime and nighttime air temperatures, especially with a southern wall orientation), disruption of the socle of buildings (for the same reasons) and also freezing of the walls from the windward side, as a result of which hoar-frost forms on the panel surfaces.

The mentioned negative phenomena are observed more frequently and are manifested to a stronger degree in buildings the production processes of which are associated with the generation of heat and also in departments having wet and damp work regimes.

The specific nature of the natural-climatic factors can obviously be reflected also in the selection of structures and materials for the wall protection of industrial buildings. In the interest of raising the level of industrialization in the prefabrication of building structures, the use of brick, monolithic concrete and other labor-intensive and non-industrial materials and types of work should be limited in a decisive manner.

Deserving of attention are those attempts aimed at strengthening those elements used for assembling the facades of buildings (for the purpose of reducing the length of the seams). Thus TsNIIpromzdaniy and PI-2 jointly developed for the Abakan Freight Car Construction Plant vertical panels 3 meters in width and 12 meters in height. The Promstroyproyekt /State Planning Institute for General Construction and Sanitary-Engineering Planning of Industrial Establishments/ introduced into operations at the Krasnoyarsk Plant for Heavy Excavators and the Pavlodar Tractor Plant vertical panels 3 meters in width and 13 and 12 meters respectively in height.

The windows in buildings must be of minimum size or they can be eliminated entirely. It is best to use wooden sash built into the wall panels. Taking into account the large volumes of shifting snow and the considerable height of the snow cover (more than 1.2 meters), considered to be typical for the northern rayons in this region, the windows (if installed at all) should ideally be installed at a sufficient height. This is borne out by the illumination-technical data: a canopy has an irregular brightness -- less towards the horizon and more towards the zenith. Thus the higher the openings are located, the greater will be the illumination they furnish (it is recalled that Russian churches have small openings built into the drums of their cupolas which fill huge areas with light).

A "northern" building must have a strong and thoroughly prepared socle capable of withstanding severe frosts, snow drifts and thaws. The exterior walls of industrial buildings should ideally be smooth and flat, thus precluding the possibility of layers of ice and icicles forming on the building. For these same reasons, there should be no projections or cornices on the buildings. As already noted, the number of entrances and exits in a building should be held to a minimum, since each one requires a warm vestibule.

Eastern Siberia, which is rich in raw materials, electric power and water resources, is suitable for the construction of large industrial enterprises and production buildings. Thus the size of these industrial buildings is also a typical feature of the buildings in this region.

In summarizing the above, we note that "northern" industrial buildings are distinguished by the following features: large size, simplicity of spatial form, compactness, a minimum number of openings (window, door and gate), higher windows, strong socle, vestibules at gates and flat facades without projections. A "northern" building invariably must be bright, emotional and artistically expressive.

A light or chromatic contrast can be employed in the exterior of enterprises and buildings. Moreover, it is recommended that warm colors of the long-wave portion of the spectrum (red, orange, yellow) be used as the principal colors for the exterior surfaces of industrial buildings. These colors are capable of psychologically raising the temperature of buildings and reducing the sensation of cold. Moreover, warm coloring in a building system serves to enliven and supplement the palette of cold colors in nature.

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INDUSTRIAL CONSTRUCTION

BRIEFS

CAPITAL CONSTRUCTION (LentASS)--During a regular meeting of the bureau of the oblast CPSU committee, measures were outlined for raising the effectiveness of capital construction in Leningrad and Leningrad Oblast during the 12th Five-Year Plan. Emphasis was placed upon the need for radically reorganizing the work of those territorial planning organs which finance the organizations and enterprise-clients in connection with raising the effectiveness of use of capital investments made available, increasing their proportion to be used for modernization and technical re-equipping, concentrating resources at the more important underway projects and observing in a strict manner the normative schedules for the duration of construction operations. It was noted that considerable reserves for production intensification and for raising labor productivity must be placed in operation through improvements in the planning solutions and in the work being performed by scientific-research institutes and planning organizations. The planning institutes and client-organizations have been assigned the task of raising labor productivity at new capabilities by not less than a factor of 1.5-2, compared to the average branch indicators, through improvements in the level of planning solutions and the introduction of leading technologies. [Excerpt] [Leningrad LENINGRADSKAYA PRAVDA in Russian 20 Nov 85 p 1/ 7026

ODESSA ATETS CONSTRUCTION--Odessa--The creation of a powerful industrial base is nearing completion in connection with the construction of the Odessa Atomic Thermo-electric Power Station, the country's first such station. This will make it possible to supply this important installation with reinforced concrete and metal structures, carpentry products and asphalt. The erection of the station's principal installations will commence early next year. Not one of the workers or specialists assigned to this large construction project will have to live in tents or trailers. In the steppe region near Odessa, where the buildings of this energy giant are springing up, the settlement of Teplodar with its multiple-story apartment buildings, school, kindergarten, stores, movie theatre and polyclinic is taking shape. The atomic station will provide the hero-city with heat and electric power. [Text] [Moscow PRAVDA in Russian 1 Dec 85 p 1/ 7026

CSO: 1821/98

HOUSING CONSTRUCTION

PROBLEMS, TASKS IN RSFSR MUNICIPAL HOUSING SECTOR IN NEW PLAN

Moscow ZHILISHCHNOYE I KOMMUNALNOYE KHOZYAYSTVO in Russian No 10, Oct 85
pp 2-3

[Article: "To Creatively Accomplish Assigned Task"]

[Text] The task of Russian municipal service workers connected with the accomplishment of the CPSU Central Committee resolution on the work of the RSFSR Council of Ministers in developing this branch was discussed by the party economic active members on 7 September.

Taking part in the conference were V. F. Isayev, first deputy chief of the CPSU Central Committee Construction Department; A. P. Gromov, director of the section of the CPSU Central Committee Construction Department; L. A. Bibin, first deputy chairman for the USSR Gosplan; N. T. Arkhipets, deputy chairman for the USSR State Committee for Material and Technical Supply; Eh. V. Sarnatskiy, deputy chairman for the State Committee for Civil Construction and Architecture; O. P. Andreyev, chief of RSFSR Council of Ministers Construction Department; Yu. I. Lomakin, chairman of the RSFSR State Committee for Material and Technical Supply; S. N. Sabaneyev, chairman of the RSFSR State Committee for Construction Affairs; leaders of the union and republic ministries and agencies and party and soviet workers.

V. I. Popov gave his report. Taking part in the exchange of opinions were B. N. Ponomarenko, secretary of the CPSU Krasnoyarsk Kray Committee; G. M. Osmukhin, chairman of the Bashkir ASSR Council of Ministers; N. I. Ruban, chief of the Stavropol Kray Executive Committee Directorate for Housing and Municipal Services; A. A. Sokolov, first secretary of the Gorky CPSU City Committee; S. A. Shubert, director of the Scientific Research Institute for KVOV [expansion unknown]; V. N. Lysenko, chief of the RSFSR Republic Trust for the Special Construction of Gas Networks /amalgamation; Yu. A. Mysnikov, chairman of the Saratov City Executive Committee; G. P. Sorokina, chairman of the Branch Unions Central Committee; V. I. Yeltsov, chief of the Vladimir Oblast Repair and Construction Amalgamation; M. B. Ivanov, chief of the RSFSR Municipal Energy Amalgamation and K. S. Shavrin, chief of Irkutsk Oblast Executive Committee Directorate for Housing and Municipal Services. I. N. Dmitriyev, deputy chairman of the RSFSR Council of Ministers, spoke at the meeting.

A full-scale program for improving services to the people during the present five-year plan was outlined.

Due to the concern of the Communist Party and the Soviet State for the constant improvement of welfare of the workers, it was emphasized at the meeting that the Russian Federation Housing and Municipal Services had been changed into a large branch of the people's economy. After only 4 years of the 11th Five-Year Plan, 68.9 billion rubles of state capital investment were made for its development. Housing with a total area of 242.3 million square meters and many large municipal facilities have been put into use. Living conditions have improved for approximately 25 million people.

The work to improve housing maintenance and repair, increase the reliability of the water, gas and power supply systems and the city electrical transport and improve municipal daily services, welfare and beautification of cities and towns continues. Steps are being taken to increase savings in this area, develop socialist competition and have the cadres of workers and specialists support this.

At the same time--and this made up the main ideological core of the meetings--the level of development of housing and municipal services is not responsive to the current demand. Regardless of the availability of poorly organized and decrepit housing which require immediate repair, the construction, modernization and capital repair plan for housing in many oblasts, krays and autonomous republics has not been fulfilled. For 4-5 years of the 11th Five-Year Plan, local councils of the people's deputies were unable to completely use 2.8 billion rubles. The housing construction plans in Karel, Burat and Tuvin Autonomous Republics, Krasnoyarsk Kray and Irkutsk, Kaliningrad, Kemerov, Rostov and Chitin Oblasts were not satisfactorily completed. An insignificant amount of complex capital repair was accomplished in the Dagestan and Kabardino-Balkar Autonomous Republics and Astrakhan, Voronezh, Kaluzh, Lipets and Rostov Oblasts.

The development of water and sewage systems was systematically cut, although the problem of household and drinking water supply and sewage purification is extremely serious.

The plans for constructing heating facilities are not successfully being completed. There are long delays in completing centralized heating supply systems. The number of small, inefficient boilers has not been reduced. Low tempos remain in providing natural gas to housing, even though a significant number of gas pipelines and outlets operate at low loads. The safe use of gas appliances is not being provided as required.

There are many fair complaints about the operation of the city electrical transport, which is the result of unsatisfactory organization of operations, poor maintenance of rolling stock and tracks and a poor production and equipment base. At the same time resources allocated to the development and reconstruction of city electrical transport enterprises in many cases have not been completely used.

There is an insignificant amount of road, bridge and overpass construction. Almost half the streets and roads do not have hard top and regular city clean up has not been organized everywhere. For a significant part of the area, there is no centralized garbage pickup and the special vehicles available are not used effectively enough.

There are inadequacies in planning the development, use and repair of housing and municipal services and the material-technical support of this branch. At the same time the labor, financial and material resources allocated are not being used effectively everywhere.

In many places the necessary conclusions were not made from the lessons of the last winter. Significant delays from the approved pre-winter work schedules have been allowed. In the preparation of the heating energy services, many inadequacies have been noted in the Altai Kray, and the Kurgan, Kemerov, Pskov, Tula and Chelyabin Oblasts.

There are many inadequacies in the activity of repair and construction organizations. In the first half of this year, every fourth one failed to accomplish the tasks for housing capital repair and 653 collectives did not meet planned profits or exceeded planned losses. Many organizations allowed the tempo of average wage growth to exceed the tempo of labor productivity growth and exceeded planned wage payments.

Some of the managers speaking at the meeting tried to justify inadequacies in their activity with this thesis: If material and technical resources which had been allocated to them are not fully provided, poor service to the population is unavoidable. But there was a comparison of work in the housing and municipal services in the Bashkir and Chelyabinsk Oblasts which had very similar characteristics.

In the Bashkir ASSR, housing and municipal services worked steadily. In the first half of this year it sharply increased the use of housing capital repair resources. It is gratifying that the use after capital repair grew to a still higher level.

The municipal workers in the Southern Urals, on the other hand, year in and year out fail to meet the plan in many areas, including housing capital repair and flower sales to the people. The task of wet garbage collection was barely one-third filled.

The municipal workers in the Novosibirsk Oblast have something to learn from the people living along the Om and the people living along the Kostrom have something to learn from their colleagues from the Komi Republic.

Overcoming parasitic attitudes of mind, maintaining high levels of service, fully drawing out hidden reserves, improving the organization of labor and management and increasing the tempo of scientific-technical progress must be done on the basis of practical activity by every supervisor in the economy and every party and union activist.

The party-economic active membership get strict guidance and use from the resolution of the CPSU Central Committee on 19 June 1985 "on measures taken by the RSFSR Council of Ministers for improving the work in housing and municipal services."

It was proposed that the party organization, main directorates, directorates, departments and amalgamations in the RSFSR Ministry of Housing and Municipal Services, the housing and municipal services organs of the Council of Ministers in autonomous republics, kray (oblasts) executive committees, the Moscow City Executive Committee and the Leningrad City Executive Committee, take additional steps to eliminate inadequate work, improve the activity of enterprises and organizations providing services to the population and facilities of people's economy, work out measures in the 12th Five-Year Plan to further develop the material and technical base of enterprises and organizations, improve intensive financial activity, introduce achievements of the scientific-technical progress and leading experience; and take the necessary steps to provide undeviating accomplishment of housing and municipal construction plans in 1985. The need to take appropriate measures on the accomplishment of housing capital repair, modernization and reconstruction plans and to improve the quality of repair work were emphasized.

It is necessary to constantly improve management structure, eliminate superfluous management and activate work on the concentration of housing and municipal services in the supervision of local soviets.

It is necessary to conduct constant additional work among the people to develop a careful attitude toward housing, water, heat, gas, sanitary and technical devices and furnishings; increase its interest in the good maintenance of housing and the economic expenditure of resources; and be more active in city public welfare work. Social competition in the exemplary maintenance of housing and engineer equipment safety must be still more broadly developed.

It is necessary to accelerate training and increase the qualifications of workers, and the work in selection, assignment and education of supervisory engineering and technical workers and employees and through the resources of mass information, make propaganda about the high prestige of the profession of housing and municipal services workers.

Steps were confirmed on the further development and improvement of work in the housing and municipal services of the RSFSR from 1985-1990.

In particular improvements in housing and municipal services planning are intended so that all autonomous republics, krays and oblasts will work out and confirm complex plans of development, strengthen the productive-technical base and improve the work of the housing and municipal services in the 12th Five-Year Plan. The Planning and Economic Directorate, the Academy of Municipal Services, main directorates and ministries will establish norms for main indicators of exploitation activity by the housing and municipal services and repair and construction production in the state plan for economic and social development of the RSFSR.

For the sake of fully providing the necessary material and technical resources to the branch in 1985-1986, expenditure norms will be developed for materials and equipment and gear requirements for the use and repair of housing and municipal facilities.

There are calls for an acceleration of the scientific-technical progress to make possible retooling plans for sub-branches and enterprises and annual plans for introducing new equipment and progressive technology. The Academy of Municipal Services and the Main Housing Directorate intend to develop and confirm, together with the RSFSR State Construction, the technical decisions for capital repair and modernization of the large-panel and large-block pre-fab housing constructed in the first years of mass, pre-fab housing construction for the purposes of improving the level of order and comfort, architecture, construction, thermal insulation and soundproofing of the buildings. The scientific research plan will provide for the development of tasks to increase the reliability of work in city engineering supply lines with the broad introduction of polyethylene pipes in the construction of engineering networks.

A significant number of measures provide for increased effectiveness of housing and municipal services work. This is to reduce the volume of uncompleted construction, achieve balance in housing and municipal construction, use resources completely and overcome lags in the development of water and sewage construction, gas supply, central heat supply, municipal electrical transport and roads.

In the future year GUPiKS [expansion unknown] will conduct experiments in model projects to broadly introduce easy, progressive construction and increase the level of industrialization in construction of municipal facilities and the production and technical base. The development of a complex program of renovation and an increased level of welfare for city housing in correspondence with established tasks was envisioned.

In the area of energy supply it was proposed to increase effectiveness in supplying gas in cities and rural villages and towns, complete corrosion protection of underground pipelines, equip the gas company with the necessary equipment, strengthen monitoring to keep boilers in good technical condition, work out mutual actions between the various energy supply organizations to eliminate the disastrous situations which arise and provide an increased level of centralized heat supply in cities, worker villages and rayon rural centers from large heating sources.

To improve services to the population it is necessary to provide for coordinated work in city passenger transportation, eliminate the lagging production and technical base of the city electrical transport, bring depots and repair shops up to strength corresponding to the inventory of tram and trolley bus parks, maintain the thyristor pulse-control and very high capacity (articulated) trolley buses and tram cars which satisfy operating conditions in the southern areas of the country and on routes with heavy traffic.

Much must be done to accomplish the measures to provide inert materials for road construction by developing available materials and opening new quarries as well as making better use of mine waste, ashes and metallurgy and energy enterprise slag.

The strength of contract organizations in the RSFSR housing and municipal services making capital repairs on housing and municipal facilities must be increased by intensification, that is without increasing the number of workers and employees.

The Single Customer Directorate and the Academy of Municipal Services together with the Ministry of Production Construction Materials developed and instituted a program to produce more reliable sanitation fittings.

The modernization of a labor organization is linked to the development of steps for cadre selection, placement, education and training, quality control and manager training, certification of all specialists and the creation of reliable cadre reserves.

Very soon local housing and municipal service organs, the Directorate of Labor and Wage Organization and the main directorates of the ministry will begin organization and mass political work to mobilize enterprises and collectives to further develop and deepen socialist competition and to broadly disseminate the initiatives of the Volga Amalgamation for the Production of Passenger Vehicles "AutoVAZ" on accelerating scientific-technical progress during the 12th Five-Year Plan and raising production effectiveness.

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HOUSING CONSTRUCTION

KIROV OBLAST HOUSING CONSTRUCTION INDICATORS LAG BEHIND RSFSR

Moscow ZHILISHCHNOYE I KOMMUNALNOYE KHOZYAYSTVO in Russian No 10, Oct 85, p 11

[Article: "The Results Could Be Better"]

[Text] A joint resolution was made by the bureau of CPSU oblast committees, oblast executive committees and the College of the RSFSR Ministry of Housing and Municipal Services to further develop housing and municipal services and improve services to the population in the majority of Russian Federation oblasts.

The current situation for effecting this resolution in the Kirov Oblast (made in March 1981) was examined by the College of RSFSR Ministry of Housing and Municipal Services on 4 July 85.

The ministry conducted a complex evaluation of the work of the Directorate of Housing and Municipal Services in the Kirov Oblast Executive Committee by sending specialists to the location.

Over the years of the 11th Five-Year Plan, more than 650 million rubles were directed toward the development of housing and municipal services in the oblast. As a result of all the financial sources used, housing with a total floor space of 2.7 million square meters (as a result more than 50,000 families have improved their lifestyle) has been put into use. There have been 335,000 square meters of housing space repaired and attic and cellar living areas have been completely eliminated. Laundries with a total volume of 221,000 cubic meters per day, 26.8 kilometers of water supply system, 80 electrical and 5.2 kilometers of gas systems, 7 kilometers of trolley bus lines, baths at 290 locations and other housing and municipal service facilities have been built.

According to the Directorate of Housing and Municipal Services for the oblast executive committee, the total of daily services for 1984 was 139 million rubles. It grew by 48 percent over the years of the five-year plan.

To improve the housing and daily services of workers in the area, more than 10,000 square meters of housing was put into use and other tasks in the social development of the collectives were accomplished.

At the same time it was noted that housing maintenance for the population and municipal services allocated in the oblast lag behind the RSFSR average indicators (see table).

<u>Indicator in the Accounting for One Individual</u>	<u>In the Kirov Oblast</u>	<u>Average for the RSFSR</u>
Provision of housing area, square meters	13.7	14.5
Water demand, liters per day	250	396
Roads and sidewalk with hard cover, percentage	48	57
Beautification, square meters	8.06	10.5
Total daily services, rubles	3.46	3.59

In individual cities and many worker villages, there was no development of centralized heating, water supply or sewage networks. In the cities of Slobodskoy; Kotelnich; Zuyevka; Novovyatsk, there were interruptions in the water supply to the population. There were incidents of inadequate heating to homes in the cities of Kirsk, Belaya Kholunitsa and the villages of Raduzhnyy, Suna and Leninskiy.

The capital investment for construction of engineer supply lines and facilities for municipal services was not being used. From 1981-1984 the plan for their construction was only 84.5 percent filled.

Much housing and many social and daily use facilities were not repaired in a timely manner and repair periods often exceeded the norms. Plans for capital repairs of housing failed.

The production and technical base for housing and municipal services did not provide for the timely repair and technical maintenance of main facilities which negatively impacted on the preparation of facilities for work under winter conditions.

In this area, manual labor was still very widely used. Industrial methods of repair and leading examples in repair construction production, telemechanization and dispatching in the housing and water and sewage services have not been adopted well. Replacement of machinery and mechanisms with long wear-out cycles in enterprises and the supply of production and technical base equipment is proceeding slowly.

The Directorate of Housing and Municipal Services for the oblast executive committees and rayon (city) executive committees are not persistent in realizing capacity available for complex development of villages and cities and in increasing the level of municipal services for the population.

The College of the Ministry of Housing and Municipal Services in the RSFSR made the directorate for housing and municipal services of the oblast executive committee responsible for eliminating the deficiencies noted; and the chief of the main branch of the directorate of the ministry took additional

steps to create and strengthen the production and technical base for housing and municipal services, providing improvement in service to the population, refining and introducing for approval by the college measures to further develop housing and municipal services in the Kirov Oblast from 1986-1990.

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CSO: 1821/66

CONSTRUCTION MACHINERY AND EQUIPMENT

CONSTRUCTION MACHINE PRODUCTION SHOWS POOR YEARLY PERFORMANCE

Moscow BYULLETEN STROITELNOY TEKNIKI in Russian No 12, December 85 p 7

[Unsigned Article: "On the Plan For Comprehensive Mechanization and Automation of Construction and Assembly Projects For 1986"]

[Text] The USSR Gosstroy collegium, having examined this question at its 3 Oct 85 session, noted that in the first half of 1985 some construction ministries and departments did not fulfill the tasks for comprehensive mechanization and automation of construction and assembly projects set by USSR Gosstroy, and that the use of construction machinery worsened by comparison with the corresponding period in 1984.

Thus, during January-June 1985 the relative amount of manual labor in excavation and earth moving increased over the first half of 1984 as follows: 25.8 percent in USSR Minugleprom [Ministry of the Coal Industry]; 11.5 percent in Minvostokstroy [Ministry of Construction in the Far East]; 19.1 percent in the construction organizations of Mosgorispolkom [Moscow City Ispolkom]. Relative increases in loading and unloading were: 21 percent in USSR Minenergo [Ministry of Power and Electrification]; 20.8 percent in Mintransstroy [Ministry of Transport Construction], and by the following amount in plastering: 17.1 percent in the Mosgorispolkom construction organizations; 16.7 percent in Gravmosoblstroy. The amount of concrete work accomplished by hand, calculated per 1 million rubles of construction and assembly work, increased substantially in USSR Minvodkhoz [Ministry of Land Reclamation and Water Resources] and USSR Minstroy [Ministry of Construction].

In some ministries the manufacture of basic construction machinery declined during the first half of 1985, compared to the corresponding period in 1984. These included manufacture of backhoes in USSR Minenergo, Minugleprom and Mintransstroy; bulldozers in USSR Minenergo and USSR Minvodkhoz; and tower cranes in Minneftegazstroy and Minmontazhspetsstroy [Ministry of Installation and Special Construction Work]. Hydraulic hammers; equipment for installation of cast-in-place tiles and structures of the "wall in earth" type; high pressure painting apparatuses; perforators for punching holes and several other effective means of mechanization are not being used satisfactorily in many construction organizations. Frequently new construction machinery with increased single unit capacity is not being fully used.

Construction ministries and departments are slow in improving the activity of mechanization trusts and administrations, and are not paying the necessary attention to instrument making, the quality of equipment repair and reducing the time required for equipment repair. They are also lax in automating of production processes in construction industry enterprises and construction projects. Shortcomings in the work of the ministries and departments in comprehensive mechanization and automation of construction have led to reduced labor productivity growth rates in construction in the first half of 1985.

The USSR Gosstroy collegium basically approved the draft Plan for Comprehensive Mechanization and Automation of Construction and Assembly Work for 1986, presented by the Department of Construction Mechanization and Automation, and tasked this department additionally to examine the remarks of ministries and departments on the draft plan, taking into account the exchange of opinions which took place at the session, and to make necessary refinements to individual tasks.

It has been proposed that the construction ministries and departments develop and implement measures to ensure fulfillment of appropriate tasks of the Plan for Comprehensive Mechanization and Automation of Construction and Assembly Work for 1986, having in mind, in particular:

to raise significantly the effectiveness of the use of the construction machinery park, most of all that of highly productive equipment;

to approve the structure and quality of the construction machinery park, accelerate the replacement of obsolete equipment, and expand the production in department subordinate enterprises of special construction machinery, interchangeable equipment, small mechanisms and tools;

to raise the quality of construction machinery repair, improve the use of the capacities of service and repair factories, and make wider use of the modular repair method;

to ensure the widespread introduction in construction projects of effective new machinery for mechanization of plastering, painting, roofing, concrete and loading and unloading work;

to improve the training of mechanizer cadres, systematically raise their qualifications and expand the use of progressive wage forms for repair workers;

to create in the first half of 1986 sections for introducing automation and robotics systems in construction industry enterprises and construction projects, and staff them with qualified specialists;

to improve the use of truck transport and heighten the responsibility of supplying and transportation organizations for complete delivery of construction structures, materials and building equipment;

and to reduce the expenditure of fuel and lubricants during operation of construction machinery and transport.

The construction mechanization and automation department and TsNIIOMTP [Central Scientific Research and Experimental Design Institute For Organization, Mechanization and Technical Assistance to Construction] are tasked to develop with the participation of the construction ministries:

a draft model statute concerning sections of construction organizations on the introduction of automation and robotics systems in construction industry enterprises and construction projects;

and, a draft model statute on the procedure for management of tool stocks.

Glavstroynauk [Main Administration for Construction Sciences] and the Department of Construction Mechanization and Automation must forecast in the draft plans for the introduction of new equipment for 1986 and the 12th Five-Year Plan general indices for comprehensive mechanization and automation of construction and assembly work.

The USSR Gosstroy obliged the department of construction mechanization and automation to strengthen its control over the fulfillment of this plan, to conduct systematic checks in construction ministries, departments, main territorial construction administrations, trusts and mechanization administrations, and to report and make recommendations concerning the results.

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CONSTRUCTION MACHINERY AND EQUIPMENT

BRIEFS

NEW FORGING FRAME -- The Volgtsennash Production Association will be able to produce assembly cranes with a load capacity up to 400 tons in the new five-year plan, owing to the putting in operation of the largest separating ingot forging frame in Minstroydormash [Ministry of Construction, Road and Municipal Machine Building]. The system capacity is 30,000 tons of large-sized forgings per year. The state commission gave a high assessment to the quality of construction and assembly work accomplished by the collectives of the Promstroy-2 Administration of Kuybyshevgidrostroy and the Togliatti organizations of USSR Minmontazhspetsstroy [Ministry of Installation and Special Construction Work] [By K. Seglin, correspondent] [Text] [Moscow STROITELNAYA GAZETA in Russian 15 Nov 85 p 1] 9069

SPECIAL GRIP-CONTAINERS -- Never have the loaders not touched the brick throughout its entire journey from the factory kiln to the place of bricklaying. Special grip-containers, designed by innovators from Poltava construction and transport organizations, have made it possible to eliminate completely manual labor in this formerly labor intensive operation and to speed up delivery of materials. A mechanism with movable "jaws" takes a stack of brick removed from the kiln and, using a crane, places it in the truck bed. The first two dozen tractor-trailer rigs have already shifted to this method. Each of them takes an average of up to ten containers at once. Transport and construction workers are actively engaged in manufacturing them. Everyone is convinced about the advantage of the innovation, which sharply reduces vehicle stoppages at brick factories and construction sites. [Text] [Moscow STROITELNAYA GAZETA in Russian 9 Oct 85 p 3] 9069

MOBILE LIFT CRANES -- Standard sized mobile assembly cranes, with sixty-three, one hundred and two hundred fifty ton lift capacities, both tracked and pneumatic wheeled, have been developed and are being assimilated into production in USSR Minmontazhspetsstroy [Ministry of Installation and Special Construction Work]. The cranes are intended for assembly of large-block machinery and prefabricated structures at dispersed construction sites. All models are standardized and are equipped with standard crane operator and tower crane operator equipment. When partially dismantled, in the form of a tractor-trailer rig, the cranes are adapted for road transport. During rail transport the cranes are dismantled into large blocks and sections of the tower crane operator equipment are telescoped into one another. [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 13 Dec 85 p 3] 9069

CSO 1821/ 97

CONSTRUCTION METHODS AND MATERIALS

DEPUTY GOSSNAB CHAIRMAN ON CENTRALIZED MATERIAL SUPPLY EXPERIMENT

Moscow PRAVDA in Russian 20 Dec 85 p 2

[Article by N. Arkhipets, deputy chairman, USSR Gosnab: "To Adjust the Rhythm of Construction Projects"]

[Text] During the discussion of pre-congress party documents, many PRAVDA readers have made practical suggestions about how to improve the effectiveness of capital construction. Today the topic of discussion is the procedure for material supply of construction projects.

For many years problem number one in construction (and this branch fulfills a most important role in modernizing and developing the country's production capability) is material and technical supply. Without a doubt it is necessary to create capacities more quickly for output of new materials. Much has been planned for doing this, although in the best case builders fulfill three-fourths of their targets for putting into operation facilities, both of their own production base, and of the bases of USSR Gosnab territorial organs; i.e., they "cut off the branch" on which they are sitting.

But the problem is not only and not so much this. Our country now produces the most metal, cement and many other materials in the world, and nevertheless these materials are constantly in short supply. I am convinced they are in short supply because in construction, as in no other branch of the economy, norm setting, planning, supply, record keeping and utilization of resources are neglected.

Bottlenecks in receipt of ferroconcrete, metal work, bricks and lumber have become the customary "emblem" of construction projects. And this means that the professional pride of the builders is also "neglected." Seldom does one hear from them suggestions about how to improve the use of materials, only demands: "Give us," "There is not enough," "Increase the norms."

The system for supplying capital construction is complex. It includes such a multiplicity of construction organizations, suppliers and relationships that it is necessary to set it up on a qualitatively new organizational and economic level. It is enough to say that there are more than 5,000 trusts in the country and that 50 metallurgical factories supply them with metal of approximately 50 standard sizes. And if we add to this the irregularity of

resource consumption over time and frequently changing technological and design decisions, the conclusion is obvious. Builders can be supplied competently only through the territorial organs of USSR Gossnab, to where the trusts must send their requests, defining them by projects and estimates.

For many years already the CPSU Central Committee and the USSR Council of Ministers have committed themselves to introducing this procedure. Experiments are underway. In places where this work is being carried out enthusiastically and responsibly success is obvious. This was achieved, in particular, in the Estonian SSR, Murmansk and Omsk, and in several oblasts in the Ukraine. Relying on this experience, Gossnab, along with the construction ministries and USSR Gosplan and Gosstroy, have started to develop a Unified System For Supply of Capital Construction.

It consists of three parts. The first is resource planning. A full requirement for materials, arranged according to each facility being constructed, is being set up in the data bank of the contractor, our territorial organ and Gosplan. During formation of the annual plans, that amount of resources which is necessary to fulfill the plan is "withdrawn" from the data bank and "gamed" according to different variants. Thousands of highly qualified specialists need not engage in so-called defending of resources. There will not be endless disputes.

The second part of the system is operational planning of resources by months, 10 day periods and quarters, for each construction organization and for each facility. With the aid of computers, the builders along with the territorial organs compile orders by project and cost estimate and schedules for resource deliveries, and they conclude bilateral agreements which cover the material responsibility of the parties for the smooth and timely supply of the facilities.

After this comes the stage of plan realization. The existence of a normative base and a far-flung network of computer equipment makes it possible to regulate effectively the flow of resources and to know at any given moment what the enterprises of the construction organizations and the territorial organs of Gossnab possess and what materials have been shipped by the suppliers and to where. Hundreds of thousands of nervous telegrams and tens of thousands of "expeditors" become unnecessary. Finally, in the third part, the difference between the actual resource expenditure and the norm is established. At present, due to the fact that there is no unified accounting of materials, no one can say how many resources are used at any particular construction project.

According to estimates, this system can be introduced over the course of three or four years. Economic savings are tentatively expected to be seven or eight billion rubles per year. The number of persons engaged in supplying construction will decline from thousands to a hundred. Resource reserves in excess of norms will decline.

But, even having accomplished this objective, it is doubtful that it will be possible to fulfill the main task facing all participants in the investment process, that of doubling the construction rate in the next decade. Although

supply is important, it is not the only function of the organization and management of construction and assembly projects. It is doubtful that supply can be set right autonomously, without improving the whole construction management system.

What does it mean to supply according to projects and estimates? It means most of all to build by projects and estimates, technologically, comprehensively and with continuity. It means that the trusts and other participants in construction must be focused on one result -- to place the facility into operation in the shortest period of time. If this does not happen, then the most orderly system, which was discussed above, will not take root and will function with interruptions.

Currently it is difficult to apply this system, due to the tremendous dispersion of forces and resources over a multitude of projects. A mechanism for dissipating capital investments has taken shape and is in operation. Its elements are flawed planning methods and assessment indices, and the lack of economic cost accounting and of a self-paying system in the activity of trusts and suppliers and of economic liability for the results of their work.

Overextension has reached such a level that even when material and labor resources for construction projects are added positive advances are not achieved. More than 600,000 facilities are being constructed in the country. If the overall number of builders is increased by 300,000 -- it is namely such a shortage which is now being mentioned in labor plans -- then on the average 0.5 workers would be added to each facility. There has also been much talk about a shortage of a half million tons of metal for the current capital construction plan. But will an additional ton per facility really accelerate the work? And it is so across the board for every resource.

I also speak about this because recently some workers from a number of departments are attempting to eliminate those elements of cost accounting which, for a number of years, have been tested in major contracting organizations and have had a certain positive experience. How are these intentions to disarm the construction branch of economic management methods to be understood? As nothing other than an attempt to perpetuate stress on production volume ["val"], which interferes with the builders' ability to place facilities in operation more rapidly.

I believe that in order to fulfill intense plans for capital construction and thereby accelerate the country's socio-economic development, it is necessary to reduce the number of facilities being erected simultaneously by 30-40 percent. And it is necessary, beginning in 1987, to shift all construction organizations to full cost accounting and to a self-paying basis, having reflected this task in the Basic Directions. Then the unified supply system which is now being developed will be able to work fully.

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CONSTRUCTION METHODS AND MATERIALS

MATERIAL OUTLAYS IN CEMENT INDUSTRY DETAILED

Leningrad TSEMENT in Russian No 11, Nov 85 pp 1-2

[Article by V. S. Karelin, candidate of economic sciences; G. Yu. Vasilik, engineer and N. V. Romashina, engineer: "Heightened Attention on Saving Material, Fuel and Energy Resources"]

[Text] The decisions of the CPSU Central Committee plenums, as well as other party and state documents frequently have indicated the need for effective use of material, fuel and energy and other resources.

Starting in 1983 industry, including the cement industry, began anew to plan to reduce production costs and to set a maximum material cost level in production cost targets (in kopeks per ruble of commodity production in wholesale prices), which determines the expenditure of all material resources for commodity production, including use of natural resources, as well as payment for work and services associated with production.

In 1983-1984 branch enterprises reduced material intensiveness by more than 15 million rubles; 1 percent better than planned.

This index was significantly reduced in western region and Minstroy material [Ministry of Construction Materials] enterprises in the Uzbek, Belorussian, Lithuanian and Moldavian SSRs. Among these are the Karachayevo-Cherkessk, Topki, Belgorod, Starooskolskiy, Kamenets-Podolskiy, Checheno-Ingush and Navoi factories; the Bryansktsement, Spassktsement, Akmyantsementas and Yakutpromstroy materialy production associations [PO] and Balakleya Combine.

At the same time, the Slantsy, Podolsk, Yashkino, Kuznetsk, Olshanka, Nikolayevka, Krivorozhskiy, Razdan, Ararat, Karadagskiy, Kaspskiy, Rustavi and Dushanbe factories, the Ambrosiyevka and Brotseny combines and the Karagandatsement PO overspent material, fuel and energy resources.

Largely due to a decline material costs in 1983-1984, the branch as a whole reduced expenditures per ruble of commodity production and the production cost of one ton of cement. The latter index declined for the first time in ten years. And were it not for lagging enterprises the planned targets for saving fuel and energy resources would have been fulfilled and the overall material cost savings would have been three times higher than those achieved.

The shift from individual resource savings targets to the planning of product material intensiveness presumes a technical and economic basis for their expenditure norms across the whole list of physical assets and the development and systematic updating of price handbooks for materials.

At present it has been possible to analyze the structure of all physical inputs for cement industry enterprises in 1983.

Fuel (39.5 percent) takes the largest share, followed by electricity (17.6 percent); mineral raw materials (10.8 percent); spare parts for repairs (8.6 percent); rolled ferrous metals (3.3 percent) and refractory materials (2.8 percent). A significant share of physical inputs is for paper bags (2.1 percent), as well as for chemical and rubber goods, most of all plasticizers and automobile tires (1.27 percent).

Costs of other material resources do not exceed one percent for each type. The above enumerated eight areas represent 86 percent of all physical inputs and require strictly fixed rates.

Besides the above listed purchased material goods the norms also include expenses for materials and raw materials manufactured internally (limestone, marl, chalk, clay, tuff, tripolite and casting boxes). This involves, for extracted raw materials the transportation and storage costs and expenses associated with the use of natural resources.

The cost structure for raw materials and basic materials in branch enterprises is characterized by the following indices (in percentages): materials and raw materials 81.2; transportation and storage costs 9.9; costs associated with the exploitation of natural resources, including blasthole drilling 5.4; other payments 3.3; cost of water 0.5; recultivation 0.2 and allocations for geological exploratory work 0.1.

Expenses associated with the exploitation of natural resources are becoming progressively larger in the costs of raw materials and basic materials. So far this portion is insignificant in the overall cost of materials and raw materials, but in the future it will increase steadily.

Since savings targets encompass all raw material, material and fuel and energy resources, the branch must conduct a systematic and thorough economic analysis of resource consumption, both in physical and monetary terms. It is necessary to consider constantly the influence of scientific and technological progress and organizational and other factors on the level and structure of physical inputs in the production of cement.

Analysis by branch enterprises has shown that the highest level of costs (in kopeks per ruble of commodity production) is found at those enterprises which work using purchased raw materials and produce a significant amount of portland blast furnace slag cement. This applies to the Podolsk, Novotroitsk, Magnitogorsk, Krivorozhskiy and Nizhniy Tagil factories, as well as the Mikhaylovtsement PO. Higher costs for portland blast furnace slag cement are explained by the reduced wholesale prices for this type of binder and,

therefore, the lower profitability of its production. As the share of portland blast furnace slag cement in the overall amount of production increases, its material intensiveness rises markedly which, at first glance, is a negative tendency. But it is known that for each ton of this binder up to 40 percent of the fuel and energy resources are saved, and granular slags are used, the effectiveness of which is obvious.

In order to eliminate these cost disproportions the cost index for portland blast furnace slag cement should be increased from 0.85 to 0.95 in relation to portland cement with mineral additives. This will make it possible to use an additional five million tons of granular slag in the branch.

The shift from fixing the rates of individual material resources to planning the end results of material intensiveness presumes a qualitatively new level of economic thinking, more complete information on production reserves and active management of the process of reducing material intensiveness.

Existing incentive indices for saving material resources have not completely solved questions of their effective use. Therefore, an effective system for incentives to reduce material expenditures is now being developed, based on management of the material intensiveness index.

Approximately 30 percent of the cement enterprises are invariably excluded from the established norms and are permitted to overspend resources.

In order to increase responsibility for inefficient use of raw materials, materials and energy, the USSR Council of Ministers instructed that when enterprises exceed the established norms for expenditure of raw material, material, fuel and energy resources (except for gas, electricity and thermal energy) they pay into the national budget double the value of the overexpenditure. Increased payment is necessary for excessive expenditure of gas, electricity and thermal energy.

The CPSU Central Committee Politburo session which examined the 1985 draft plan and budget recommended that each labor collective pledge to work two days per year using materials and fuel which have been economized.

In the cement industry this means saving 127,700 tons of conventional fuel; approximately 80 million kilowatt hours of electricity; 1,800 tons of refractory materials; more than 1,000 tons of grinding materials, as well as 0.55 percent of the overall branch requirement for spare parts and rolled ferrous metals. Savings from these types of resources alone will be more than eight million rubles.

In order to solve this task it is necessary that ways to reduce production costs be actively sought at each work place.

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NORILSK SPECIALISTS DISCUSS READY-MIX CONCRETE PUMPS IN FAR NORTH

Moscow MEKHANIZATSIYA STROITELSTVA in Russian No 11, Nov 85

[Article by Ye. V. Korotov and N. V. Yetkin, Norilsk Mining-Metallurgical Combine: "Determining the Applications of Ready-Mix Concrete Pumps in Far Northern Regions"]

[Text] The volumes of in-situ-cast concrete continue to rise year after year. The labor expenditures for direct placement of concrete account for about 53 percent of the total labor expenditures for concrete work. In order to reduce these costs, a new technology must be implemented, replacing the inadequate traditional means of concrete placement with new means of integrated mechanization.

Recently introduced ready-mix concrete pumps are capable of supplying and placing concrete mix into various types of structures at rates of up to 60 cubic meters per hour and higher. The use of ready-mix concrete pumps for construction in the Far North will greatly reduce the number of workers needed to produce in-situ-cast and reinforced concrete. It will also reduce the job time, raise the production and safety levels and significantly improve the quality of construction-installation work.

The most important tasks are to achieve maximum productivity of ready-mix concrete pumps and provide an even load during the entire year.

The method of determining efficient applications of high-capacity ready-mix concrete pumps in Far Northern regions must include a determination of how regional factors influence, above all, the whether or not and for how long the pumps can be used under various conditions and in different seasons. Special attention must be given to weather conditions, which are a decisive factor affecting the use of ready-mix concrete pumps for both concentrated and scattered construction. A study of long-term (20-year) weather data showed that the use of ready-mix concrete pumps (based on their passport characteristics) is restricted:

1. For scattered construction outdoors:

a) during snowstorms (from 120 to 135 days per year);

b) when human labor is restricted due to "harsh" weather (an average of 20-23 days per year);

c) when wind limits the operation of auxiliary hoist mechanisms (about 15 days per year) when makeshift concreting methods are used;

d) when wind limits the operation of ready-mix concrete pumps (about 15 days per year) and

e) when temperature limits the operation of ready-mix concrete pumps (about 60-65 days per year).

2. For concentrated construction outdoors:

a) when temperature limits the operation of ready-mix concrete pumps (about 45 days per year);

b) when human labor is restricted due to "harsh" weather (about 15 days per year) and

c) when wind limits the operation of ready-mix concrete pumps (about 10 days per year).

For scattered construction, the influence of these limitations can be reduced by: 1) using heated enclosures, 2) using the "classical methods" of ready-mix concrete pumping and 3) ensuring that snow-removal equipment is continually used on concrete supply routes. For concentrated construction, these limitations can be reduced by organizing ready-mix concrete pump operation in enclosed heated areas at the construction site.

The capacities of the local construction industry and the supply of concrete-mix components suitable for pumping are of great significance for keeping the ready-mix concrete pumps evenly loaded throughout the year. The supply of inert materials of the necessary particle sizes affects the number of ready-mix concrete pumps which can be used and the degree to which their rated capacity is utilized. For instance, the capacity of the local construction industry to produce ready-mix concrete can support the use of only two Worthington (Italy) ready-mix concrete pumps during the year if operated for two-shifts at maximum capacity (60 cubic meters/hour).

In order to ensure high productivity of ready-mix concrete pumps, sufficient special transport must be available to supply the concrete mix to the pumps. For instance, at the Norilsk Combine, dump trucks presently haul 90 percent of the concrete mix, while mixer trucks haul 10 percent. Because there are too few mixer trucks, the "classical method" of loading the concrete mix into the ready-mix concrete-pump hopper must be changed. This necessitates additional measures, changes the concreting method and makes concrete placement by ready-mix concrete pumps more expensive. It also increases the machine content in methods involving ready-mix concrete pumps and limits the application of these pumps. The use of dump trucks instead of mixer trucks to bring in the concrete mix reduces the capacity of ready-mix concrete pumps by up to 30 percent.

The lack of auxiliary equipment--additional concrete-delivery pipes, additional pump units and delivery-pipe heaters--also affects the

application of ready-mix concrete pumps. For instance, at the Norilsk Combine the lack of additional standard concrete-delivery pipes practically eliminates the possibility of pumping concrete higher than 27 meters, while Worthington ready-mix concrete pumps are rated for delivery up to heights of 80 meters and up to 250 meters horizontally.

The technical characteristics of construction projects often require that in-situ-cast concrete be placed at heights of over 35-40 meters, while the lack of auxiliary equipment sharply reduces the operating range of ready-mix concrete pumps.

The shortage of mixer trucks and auxiliary equipment, on the one hand, and the use of dump trucks to deliver concrete mixes to the hoppers of ready-mix concrete pumps, on the other hand, force the use of custom-designed, inefficient methods for operating ready-mix concrete pumps under specific construction-site conditions. This, in turn, greatly affects the application of high-capacity ready-mix concrete pumps.

The method of loading concrete mix into the receiving hopper of ready-mix concrete pumps actively influences the capacity of ready-mix concrete pumps. When determining productivity, this factor is taken into account by introducing a coefficient which shows the reduction of productivity due to the method of loading concrete into the hopper. Thus, when a mixer truck is used to load the hopper of a ready-mix concrete pump for concreting individual foundations with a volume of up to 50 cubic meters, this coefficient is equal to 0.95, while when a transfer-conveyor hopper is used, it is 0.6.

The most important criterion for determining the application of ready-mix concrete pumps is whether there are sufficient volumes of in-situ-cast concrete work for the rated capacity of ready-mix concrete pumps. The volumes of in-situ-cast concreting must provide a minimum of two shifts of continuous operation of one or several ready-mix concrete pumps, as determined by the maximum long-time pump capacity. The type of structure to be concreted and the location must be taken into account ahead of time. For instance, using mixer trucks to load concrete into the receiving hopper of a ready-mix concrete pump, the capacity-reduction coefficient is 0.85 when concreting walls up to 1 meter thick and 0.9 when concreting foundation plates up to 1 meter thick.

The technico-economic indicators of using ready-mix concrete pumps must be compared with those of traditional concrete-placement methods when determining efficient areas of concrete-pump application.

Conclusions

The area of application of high-capacity ready-mix concrete pumps in the Far North is determined by taking into account the influence of the following factors on the performance of ready-mix concrete pumps, operating personnel, auxiliary equipment and transport: the presence of sufficient volumes of in-situ-cast concrete and reinforced-concrete work to ensure full (according to passport data) loading of the ready-mix concrete pumps; distinguishing climatic features; distinguishing features of construction

conditions and projects; construction-industry capacity to produce ready-mix concrete; the supply of ready-mix-concrete components which meet the requirements for pumping; the availability of auxiliary concrete-pump equipment and special transport devices to supply concrete mixes and the economic savings compared with other methods of concrete placement.

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CONSTRUCTION METHODS AND MATERIALS

SYNOPSIS OF ARTICLES IN TSEMENT, AUGUST 1985

Leningrad TSEMENT in Russian No 8, Aug 85 p 23

UDC 666.940 : 658.567

PROBLEMS OF WIDESPREAD USE OF RECYCLED MATERIALS IN THE CEMENT INDUSTRY

[Synopsis of article by T. V. Kuznetsova, pp 1-3]

[Text] This article discusses the scientific fundamentals and technical possibilities, as well as the economic and ecological effectiveness, of using process wastes in cement production. Proposals are given to solve organizational problems. One figure, seven references.

UDC 666.942 : 662.62.005

RECEIVING, STORAGE AND QUALITY CONTROL OF SOLID FUEL AT CEMENT PLANTS IN SIBERIA AND THE FAR EAST

[Synopsis of article by L. M. Vasilyeva and S. N. Eykhe, pp 3-4]

[Text] The following aspects of the solid-fuel situation are discussed: enterprise supplies, accounting, storage, organization of sampling and quality control. The existing situation with normative-technical documentation is illustrated, based on inspections at a number of cement plants and taking into account present trends in coal production and changes in coal quality.

Proposals are made for improving: a) the system of planning demand and shipments of solid fuel, b) accounting, c) storage and d) quality control. Five references.

UDC 666.940 : 658.567

MINERAL COMPOSITION OF CEMENTS BASED ON PRODUCTION WASTES

[Synopsis of article by V. K. Kozlova and G. I. Ovcharenko, pp 4-5]

[Text] The results are given of research on the use of process wastes with elevated aluminum oxide content in place of the natural alumina component

in raw-material mixtures. It is shown that reactive clinkers can be obtained at lower temperatures. Three tables, four references.

UDC 666.94.331.876.2

GROWTH OF THE STAKHANOV MOVEMENT IN THE CEMENT INDUSTRY

[Synopsis of article by G. A. Krympokha, pp 6-7]

[Text] This article discusses the origin and growth of the Stakhanov movement in cement production and the achievements of the first Stakhanovites. Two illustrations + one on the inside front cover.

UDC 666.94.331.876.2

NEVYANSK STAKHANOVITES

[Synopsis of article by V. A. Kambulov, pp 8-9]

[Text] The labor achievements of the first Stakhanovites at the Nevyansk Cement Plant are illustrated. The obligations of the Nevyansk cement workers in honor of the 27th CPSU Congress are listed.

UDC 331.876.2

CONTINUING THE GLORIOUS LABOR TRADITIONS

[Synopsis of article by M. A. Ivanin, p 9]

[Text] The labor successes of the surface-mine workers at Bryansktsement Production Association are reported. These workers are continuing the traditions of the first Stakhanovites: "Work Fast and Well!" One illustration + one on inside front cover.

UDC 666.94.331.876.2

FIRST STAKHANOVITE CEMENT WORKERS

[Synopsis of article, pp 10-11]

[Text] Short biographies are given of the first Stakhanovite cement workers during the early five-year plans of high production indicators. Eight illustrations.

UDC 666.94.041

DISTINGUISHING FEATURES OF THE ROTARY KILNS AT THE MARIEL CEMENT PLANT

[Synopsis of article by Aleman A. Rosales, pp 12-13]

[Text] The design and technical characteristics of the dry rotary kilns at the Mariel Cement Plant in Cuba are described. The operating data of these units are given. Two illustrations, seven references.

UDC 666.946.7

SPECIAL CEMENT FOR GEOLOGICAL EXPLORATORY DRILLING

[Synopsis of article by S. I. Danyushevskiy, G. G. Dmitriyeva and A. I. Pavlov, pp 14-15]

[Text] Expanding plugging mixtures based on industrially produced portland cements are discussed. These mixtures are used to quickly stop the absorption of drilling mud during exploratory drilling and for various types of structural repairs. Two illustrations, four references.

UDC 660.940

TO RAISE THE PRODUCTION EFFICIENCY AND QUALITY OF STRUCTURAL MATERIALS

[Synopsis of article by A. P. Vitushkin, pp 16-17]

[Text] The work of the Eighth Scientific Lectures given at the Belgorod Technological Institute of Construction Materials imeni I. A. Grishmanov is reported. One illustration.

UDC 666.94 : 330.115 : 338.984.2

MATHEMATICAL MODEL FOR PREDICTING CEMENT CONSUMPTION IN THE LATVIAN SSR

[Synopsis of article by V. V. Stoshkus and V. M. Rutkauskas, pp 18-19]

[Text] A method is described of predicting the demand for cement based on an analysis of the interrelationships between actual cement consumption and the volume of construction-installation work, the production of precast reinforced-concrete structures and the time trend. A multiplicative model is developed for predicting the cement demand and the model's characteristics are given. Three tables, four references.

UDC 666.94 : 621.926.5

OPTIMIZATION OF THE COMMINUTION PROCESS IN BALL MILLS WITH ADJUSTABLE ELECTRIC DRIVES

[Synopsis of article by V. R. Kovalyukh, pp 19-22]

[Text] Based on research, recommendations are given on determining the optimum rotating speed and the ball loading ratio for a cement mill. Recommendations are also given on stabilizing the optimum operating condition depending on the change in the ball loading ratio for the time intervals between regular rechargings. Four illustrations, 10 references.

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CSO: 1821/68

CONSTRUCTION METHODS AND MATERIALS

SYNOPSIS OF ARTICLES IN TSEMENT, SEPTEMBER 85

Leningrad TSEMENT in Russian No 9, Sep 85 p 23

UDC 664.94.502.7

IMPROVING ENVIRONMENTAL PROTECTION

[Synopsis of article by L. V. Petravichyus, p 1]

[Text] The speech which L. V. Petravichyus, deputy of the USSR Supreme Soviet and director of Akmyantsementas Production Association, made at the third session of the USSR Supreme Soviet, 11th Convocation, is presented. The speech describes the environmental-protection measures taken at the association and in the Lithuanian SSR. He also discusses problems aimed at improving environmental protection.

UDC 502.7 : 331.820 : 338.4 : 666.94

ECONOMIC INCENTIVES FOR THE EFFICIENT USE OF NATURAL RESOURCES

[Synopsis of article by N. V. Romashina, V. S. Karelin, and G. V. Fominykh, pp 2-3]

[Text] A sector method, developed by the State All-Union Scientific-Research Institute of the Cement Industry, for determining the reimbursement rates for geological exploration work and the higher rates for above-norm losses in the production of cement raw materials is discussed. The inclusion of expenditures for geological exploration and land reclamation into the production cost of industrial products and into the wholesale price will make possible prices which approximate the socially necessary expenditures for the reproduction of natural resources. Nine references.

UDC 502.7 : 331.820 : 658.58 : 666.94

PROBLEM OF RELIABILITY OF DUST-COLLECTING EQUIPMENT

[Synopsis of article by V. V. Durov, pp 4-5]

[Text] The need to improve the reliability of dust-collecting equipment of the cement industry is substantiated. The basic directions and possible results of these developments are discussed. One illustration.

UDC 666.940.628 : 697.946

NEGATIVE EFFECT OF VIBRATING THE HOPPERS OF ELECTROSTATIC PRECIPITATORS

[Synopsis of article by Yu. V. Lagutin, pp 6-7]

[Text] The main disadvantages of installing and operating vibrating systems to remove trapped, conglomerated dust from electrostatic-precipitator hoppers are described. The negative influence of these disadvantages on dust collection is described. Recommendations are given for improving the reliability of vibrating systems. One table; two illustrations; three references.

UDC 666.94.004.86 : 502.7 : 331.820

USE OF PRODUCTION WASTES: AN IMPORTANT FACTOR IN RESOURCE CONSERVATION AND ENVIRONMENTAL PROTECTION

[Synopsis of article by A. V. Kiselev, T. Ya. Galperina, V. Ye. Ageyenko et al., p 8]

[Text] Problems of using recycled resources in cement production are discussed. Five references.

UDC 666.9.015.26 : 502.7 : 331 : 820

STRENGTH OF GRANULES MADE OF RAW-MATERIAL MIXTURES WITH ADMIXTURES OF SLURRY THINNERS

[Synopsis of article by B. M. Melnik, V. I. Mospan, and Sh. M. Rakhimbayev, pp 9-10]

[Text] Based on research on the strength characteristics of raw-material granules produced by chain screens of rotary kilns at the Belgorod, Kamenets-Podolskiy, and Savinskiy Cement Plants when these plants use various slurry thinners, conclusions are reached and the function of granule-strength increase vs. thinning capability of the admixtures is established. One table; three illustrations; five references.

UDC 666.94 : 502.7 : 331.820

EXPERIMENTAL BASE OF THE INSTITUTE

[Synopsis of article by Yu. A. Izmodenov, Yu. N. Kashichkin, and A. A. Fedik, pp 10-12]

[Text] The scientific-technical cooperation between NIPIOTstrom [Scientific-Research and Project Institute for Purification Installations, Safety and Labor Protection in the Construction-Materials Industry] and the

Ulyanovsk Cement Plant in developing and perfecting industrial-test specimens of gas- and dust-collecting equipment is described. Particular attention is given to the development of granular filters with impulse regeneration systems. Three illustrations; nine references.

UDC 502.7 : 331.820 : 620.08 : 666.94

INVENTIONS BY NIPIOTSTROM FOR THE CEMENT INDUSTRY

[Synopsis of article by N. K. Ivanenko and Zh. G. Yeremenko, pp 12-13]

[Text] Inventions which have been made by NIPIOTstrom staff members and implemented in the cement industry are reported. Four illustrations.

UDC 502.7 : 331.820.083.77 : 666.94

TECHNICAL MEANS OF MONITORING AND MEASURING THE DUST CONCENTRATION IN GAS FLOWS AND THE ATMOSPHERE

[Synopsis of article by T. R. Korzh, p 14]

[Text] The best recently developed domestic and foreign instruments and methods for monitoring and measuring the dust concentration in the environment are discussed.

UDC 502.7 : 331.820 : 666.94

ANGARSK CEMENT WORKERS IMPROVE PRODUCTION EFFICIENCY

[Synopsis of article by S. S. Pokhabov, pp 15-16]

[Text] The work experience of the collective of the Angarsk Cement-Mining Combine in improving cement production efficiency is reported.

UDC 666.94 : 658.589

SOME EXPERIENCES OF A CEMENT-PLANT MECHANIC

[Synopsis of article by S. Ya. Antoshchenko, pp 17-18]

[Text] Conclusions from the multiyear experience of a cement-plant repair and operating mechanic are presented. One illustration; four references.

UDC 621.928.94

REGENERATION OF BAG FILTERS BY AERODYNAMIC SHAKING

[Synopsis of article by V. R. Shuman, pp 19-20]

[Text] The results are given of research on the process of regenerating the fabric of bag filters by aerodynamic shaking. The shaking is produced by sudden interruptions of an air flow at the outlet from one of the filter chambers. A qualitative description of this regeneration process is given.

Analytical functions of the magnitude of acceleration affecting the filtered dust layer are derived; these functions are useful in dust-collecting practice. Two illustrations; two references.

UDC 502.7 : 331.820 : 666.94

DUST SUPPRESSION IN ASH DUMPS

[Synopsis of article by V. M. Melkozërov, T. I. Nemtseva, A. I. Zaika, and V. A. Ashikhmin, p 20]

[Text] The results of using polymer coatings to prevent the dispersion of unconnected, finely dispersed materials are briefly presented. The formulas of coatings for dust-producing surfaces are given.

UDC 502.7 : 331.820 : 666.94

LIPETSK REPAIR WORKERS IMPROVE LABOR PROTECTION AND PRODUCTION EFFICIENCY

[Synopsis of article by Ye. K. Sotskov, p 21]

[Text] The work experience of the collective of the Lipetsk Specialized Cost-Accounting Section of Soyuzspetstsemstroyremont Trust to improve labor and environmental protection is discussed.

UDC 621.928.3/621.928.9.083.77 : 666.94

ANALYSIS OF PATENT INFORMATION ON CENTRIFUGAL-INERTIAL DUST COLLECTORS

[Synopsis of article by T. V. Neustroyeva and T. R. Korzh, p 22]

[Text] The status of developments for the dry removal of dust from gases using centrifugal-inertial dust collectors is discussed (based on patent information for the years 1977-1983). One table; four references.

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CONSTRUCTION METHODS AND MATERIALS

SYNOPSIS OF ARTICLES IN TSEMENT, OCTOBER 85

Leningrad TSEMENT in Russian No 10, Oct 85 p 23

UDC 666.94 : 652.26

IMPROVING THE POWER SERVICE OF CEMENT ENTERPRISES

[Synopsis of article by V. L. Ruban, pp 1-3]

[Text] Discussed are several problems of generating-equipment operation and repair which must be handled by the power services of cement enterprises.

The need to develop a centralized power-repair service in the USSR Ministry of Construction Materials system is substantiated, as is the need to more efficiently perform reconstruction and modernization of generating equipment. One illustration + three on front inside cover.

UDC 666.94.331.876.2

LABOR TRADITIONS OF THE MOSCOW-AREA CEMENT WORKERS

[Synopsis of article by A. N. Obukhov, pp 4-5]

[Text] The work of the collectives of the Voskresenskiy and Gigant Cement Plants during the first five-year plans and the war years is presented, as is the participation of the collective of Voskresensktsement PO [Production Association] in the labor watch in honor of the 40th Anniversary of the Victory. The obligations of the Voskresenskiy cement workers for a worthy observance of the 27th CPSU Congress are given.

UDC 666.94.331.876.2

A COLLECTIVE IS KNOWN BY ITS DEEDS

[Synopsis of article by K. M. Dmitrenko, p 6]

[Text] The labor traditions of the cement workers of the Ulyanovsk Plant are discussed, as are their successes in the socialist competition in honor of the 50th anniversary of the Stakhanov Movement.

LAUREATES OF LENIN DAY

[Synopsis of article by M. Z. Bukhtin-Davydov, p 7]

[Text] A new form of incentives for leading production workers, which was implemented at Karagandatsement PO, is described. The first laureates at the association are reported. Three illustrations.

UDC 666.94.331.876.2

FROM THE FIRST STAKHANOVITES TO THE SHOCK-WORKERS OF COMMUNIST LABOR

[Synopsis of article by V. K. Mekhonoshin, p 8]

[Text] The story is told of how the movement for a communist attitude to labor was expanded at the Katav-Ivanovsk Plant during the first five-year plans and World War II. The leading production workers of the 11th Five-Year Plan are also featured. Three illustrations.

UDC 666.9.015.42

TRANSFER OF ELECTRONS DURING THE ELEMENTARY EVENT OF CEMENT HYDRATION

[Synopsis of article by Ye. F. Strizhev, M. M. Sychev, and N. Yu. Germash, pp 9-11]

[Text] The equilibrium concentration of electrons and holes, which is a result of the thermal generation of electron-hole pairs in cement minerals, is small, but sufficient to ensure high reaction rates with their participation.

Information about the role of electron phenomena during cement hardening can be obtained by measuring the oxidizing potential of the cement paste in the liquid or solid state, as illustrated in this article. Four illustrations, 15 references.

UDC 666.9.015.424

PHYSICO-CHEMICAL PROPERTIES AND HYDRAULIC ACTIVITY OF COMPLEX ALITES

[Synopsis of article by R. A. Sokolova, M. M. Piryutko, and L. G. Galafutnik, pp 11-13]

[Text] The basic factors of the change and adjustment of the structure and properties of alites are the chemical nature, quantity and combination of the impurities.

This article reports the results of physico-chemical tests which showed that admixtures of SO_3 or P_2O_5 have a positive influence on the strength properties of alites. One table; three illustrations; five references.

HYDRATION OF TETRACALCIUM ALUMOFERRITE IN THE PRESENCE OF KRENTS

[Synopsis of article by A. K. Zapolskiy, B. E. Yudovich, V. A. Dmitriyeva et al., pp 14-15]

[Text] The results are presented of research on the influences of krents on the processes of hydration and hardening of C_4AF with various gypsum contents. It is shown that this admixture promotes the formation of an additional quantity of high- and low-sulfate forms of calcium hydrosulfoalumoferrite and changes the morphology of the hydration products. One table; four illustrations; eight references.

UDC 666.9.015.22

ALITE FORMATION DURING ROASTING OF INDUSTRIAL RAW-MATERIAL MIXTURES AND WAYS TO INTENSIFY IT

[Synopsis of article by B. S. Albats and Ye. L. Lebedeva, pp 16-18]

[Text] The results are presented of research on alite formation during roasting of industrial raw-material mixtures of various mineral and chemical compositions. The process-retardation phenomena are established which are caused by the formation of an alite shell around the dissolving belite crystal, with subsequent breaking of the shell. A quantitative function of temperature vs. roasting time is proposed for the practical realization of rapid roasting in rotary kilns in order to intensify alite formation. Two tables; seven illustrations; three references.

UDC 666.94 : 664.733.009.01

GRINDING CEMENT IN ROD MILLS

[Synopsis of article by N. V. Shakhmagon and R. S. Levman, pp 18-20]

[Text] Foreign experience is described in using rod mills to grind cement. These mills have several advantages over tube mills: reduced energy consumption, automatability of the grinding process etc. Six references.

UDC 666.94 : 92.004

CONTRIBUTION OF P. P. BUDNIKOV TO THE STUDY OF SILICATE CHEMISTRY AND THE DEVELOPMENT OF SILICATE TECHNOLOGY

[Synopsis of article by T. V. Kuznetsova and O. P. Mchedlov-Petrosyan, p 21]

[Text] The scientific activity is described of leading silicate scientist P. P. Budnikov, doctor of technical sciences, professor of the Moscow Chemical-Technology Institute imeni D. I. Mendeleyev and Hero of Socialist Labor. One illustration.

FIRST CONGRESS OF RUSSIAN CEMENT-PLANT WORKERS AND TECHNICIANS

[Synopsis of article by B. V. Volkonskiy, pp 22-23]

[Text] The main questions and problems discussed at the First Congress of Russian Cement Workers in 1885 in Saint Petersburg are reported. Six references.

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CONSTRUCTION METHODS AND MATERIALS

SYNOPSSES OF ARTICLES IN MEKHAIZATSIIYA STROITELSTVA, NOVEMBER 1985

Moscow MEKHAIZATSIIYA STROITELSTVA in Russian No 11, Nov 85 p 32

UDC 693.61.002.5

ENERGY-CONSERVING FINISHING TECHNOLOGY WITH FEW OPERATIONS

[Synopsis of article by G. A. Pavlyukevich, G. I. Kholodinskiy and O. B. Dmitruk, p 13]

[Text] This article presents information on a basically new technology of applying plaster coatings. This method can be profitably used for finishing the internal surfaces of external walls with reinforced thermal-insulating plaster and for finishing the jambs of wall openings. A monolithic plaster coating of any thickness is manufactured in one layer by injecting a rapid-setting solution into the cavity between the structure and a light, portable form. This finishing technology eliminates the successive operations of multilayer application, smoothing and finishing the traditional layers of plaster coatings.

Structural diagrams of the process equipment are given, along with the compositions of plaster mixtures and information on the economic feasibility of the new technology. Seven illustrations, two tables.

UDC 69.002.5-82.004.1

EXPERIENCE OF OPERATING CONSTRUCTION MACHINES WITH HYDRAULIC DRIVES

[Synopsis of article by N. A. Fomin, S. S. Vechko and N. I. Dorkin, p 24]

[Text] Construction machines with hydraulic drives are widely used. This has posed new, more difficult problems for the departments which service and repair these machines. The experience of operating these machines has shown that their operating life largely depends on, first, timely accounting and repair of the hydraulic-system elements and, second, on the planned replacement and cleaning of the hydraulic fluid.

Specialized Administration of Mechanized Work No 2 of Stroymekhanizatsiya No 1 Trust has done some work in this area. First of all, a so-called record card was introduced for each machine with hydraulic drive. This card reflects all the basic information on the hydraulic drive of the given

machine. A specialized section was developed and implemented for the timely and proper cleaning of hydraulic fluid. These measures have had positive results, namely: reduction of unplanned downtime and higher total output of construction machines with hydraulic drives. One table, one illustration.

UDC 69.002.51.004.14:69.003:13

PLANNING THE PROFITABILITY LEVEL FOR MACHINE-INSTALLATION MECHANIZATION ADMINISTRATIONS

[Synopsis of article by A. D. Maksimov, p 27]

[Text] This article discusses the problem of how machine-installation UM's [mechanization administrations] can practically implement the indicator of profitability level of construction-machine use. This indicator is needed because of the particular methodological features of planning the cost volumes of work done by these UM's. There is shown to be a full interrelationship between the magnitude of the level of profitability and the indicators of machine use in the UM's. The implementation of this indicator is designed to: 1) strengthen the system of material incentives for the efficient use of construction equipment, 2) improve the inventory of machines and 3) improve the settlement calculations between construction-installation administrations and UM's for the operation of means of mechanization. One table.

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BRIEFS

ULTRALIGHT CLAYDITE CONCRETE DEVELOPED--Specialists from Dneproselstroy-industriya Association, jointly with scientists from the Dnepropetrovsk Construction Engineering Institute have developed an ultralight claydite concrete. The new construction material was obtained by introducing air attracting additives to the mix and replacing silico sand with expanded clay aggregate screenings. The technological circuit was also changed. The concrete producing unit was "shifted" to the molding shop and placed above the location where the mix is poured into the mold. This made it possible to eliminate excessive overloading of air-saturated mix and, thereby preserve the maximum porosity of the product structure. Claydite concrete is also distinguished by its high heat insulating properties and durability. (By V. Batsuk, Engineer) [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 50, Dec 85, p 19] 9069

CONCRETE SLAB STANDARD APPROVED--The USSR State Committee for Construction Affairs has decided to approve and put into effect beginning 1 January 1987 the state standard, "Strip Foundation Concrete Slabs. Specifications," developed by the Gosgrazhdanstroy Central Scientific Research Institute of Experimental Residential Planning and the USSR Gosstroy Scientific Research Institute of Concrete and Reinforced Concrete. Ministries and departments are to take steps to ensure the timely preparation of production and output by their subordinate enterprises of concrete slabs for strip foundations, corresponding to the requirements of this standard. Points 1 and 3 of USSR Gosstroy Decision No 204 of 18 December 1980, "Approval of State Standard 'Strip Foundation Concrete Slabs. Specifications' (GOST 1358 - 80)," will become invalid on 1 January 1987. [Text] [Moscow STROITELNAYA GAZETA in Russian 10 Nov 85 p 3] 9069

CONCRETE ADDITIVES--Scientists from the Alma-Ata Architectural Construction Institute have proposed additives which improve the quality of concrete solution. The innovation increases the resistance of the solution to low temperatures and corrosive environments, improves its durability and imparts water resisting qualities. A number of such mixes are known, but expensive dosing apparatuses are required for them to be used. Using the new additives made it possible to get by without the dosing apparatuses and, without changing over equipment, improved the durability of parts almost by half. Walls plastered with the new solution did not become damp. Waste products from the chemical, food, and paper and pulp industries and slag and ash from

electric power stations are the main raw material for the additive. [Text] [Moscow STROITELNAYA GAZETA in Russian 13 Dec 85 p 3] 9069

ADVANCED CONSTRUCTION DESIGNS--The article, "Progressive Designs in Action," (No. 38) touched upon the effective use of steel designs in buildings less than 30 meters wide, as well as of light metal designs in complete sets, in the light of the CPSU Central Committee and USSR Council of Ministers resolution, "On the Further Development of Industrialization and Improvement of Labor Productivity in capital construction." At present the use of these designs is in fact limited. It is regulated by technical regulations on the economical expenditure of basic construction materials (TP 101-81), which are coordinated with USSR Gosplan and interested ministries and depend on the resources allocated to capital construction for rolled metal, formed galvanized sheet, aluminum and efficient types of blanketing for warming purposes. The areas of use of metal designs were also determined from this according to industrial branches, types of buildings and structures, their widths and heights, the load carrying capacity of cranes, etc. In connection with the substantial increase in the numbers of buildings and structures to be built from light metallic and other types of efficient designs and materials, noted in the 12th Five-Year Plan, USSR Gosstroy, with the participation of USSR Gosplan and interested ministries, will refine TP 101-81 and examine the question of the expanded use of these designs and materials. [Article by D. Pankovskiy, Deputy Chairman, USSR Gosstroy] [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 85, p 16] 9069

NEW FIBER BOARD FACTORY--Products from the gypsum fiber board factory placed in operation ahead of schedule in Chelyabinsk will make it possible to speed up finishing work and improve its quality. Laborious plastering processes in the construction of housing, social and cultural facilities and industrial buildings will be replaced by the assembly of smooth light grey boards, ready for wallpapering or painting. The country's first such enterprise will produce 6,000,000 square meters of board per year. [Text] [Moscow STROITELNAYA GAZETA in Russian 13 Nov 85 p 3] 9069

TEPLOOZERSK CEMENT FACTORY--Since the beginning of the five-year plan the collective of the Teploozersk Cement Factory shipped 95,000 tons of cement above the plan to construction projects in the Far East. Their success was achieved by redesign of the enterprise, which was carried out without halting basic production. I. Shatalov, a cement mixer operator, was first in the results of the last ten days of pre-congress shock work. [Text] [Moscow TRUD in Russian 28 Dec 85 p 1] 9069

FACTORY DELAYED--At the end of next year the Minsk factory for efficient construction designs is to enter operation. Sheer covering panel sets, dividing walls and completely prefabricated external wall panels will be manufactured for construction of industrial buildings. Understanding the importance of the facility, the builders pledged to complete it one quarter early. Alas, this time their desire could not be realized. One of the main suppliers, the Belgorod Metal Construction Factory, did not even get around to fulfilling its past obligations. As a result the pace of work at the construction site has slowed sharply. [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 6 Dec 86 p 1] 9069

PLAN FULFILLED EARLY--The collective of the Order of Lenin Zhigulevsk Construction Materials Combine achieved a great labor victory. It fulfilled the five-year plan for output of cement and asbestos cement pipes more than a month early. The success was due to the accomplishment of a comprehensive equipment modernization program. For example, in the grinding shop obsolete grinders were replaced with more productive assemblies with no halt in production. Losses of cement were reduced by replacing a number of equipment items with more effective bag filters. New, economical heat exchangers were introduced in the firing kilns. As a result, labor productivity in the combine increased 7 percent since the start of the five-year plan, rather than the 4.2 percent planned. Before the end of the year the collective intended to produce no less than 200,000 tons of cement and approximately 300 kilometers of asbestos pipe above the plan. [by K. Seglin] [Text] [Moscow STROITELNAYA GAZETA in Russian 6 Dec 85 p 1] 9069

IMPROVED ROOFING MATERIALS--The standard service life of modern residential housing is 125-150 years. Even floors, windows and doors can serve without major repair for 40 years or longer, not to mention the basic structures -- walls and roofing. Nevertheless, it is necessary to make repairs much sooner, because water pipes and roofing materials made from prepared roofing paper become unserviceable. But now there are new roofing materials manufactured from polymer-bituminous and rubber bituminous compounds, polymer film and mineral fabrics. Why then lay paper on the roof of a modern house? After all, along with the unsuitable paper, which comprises by weight no more than 5 percent of the bituminous roofing paper, it is also necessary to dump off completely suitable petroleum bituminous materials for each capital repair. This situation is also occurring with steel water pipes. For a long time already pipes with higher corrosion resistance have been manufactured -- zinc pipes, pipes made out of special steels and pipes with protective coatings. However, in construction everywhere ordinary pipes, called "black" pipes, continue to be used. [Article by A. Starshov, chief of the production and technical department, Ufagorremstroy trust] [Excerpt] [Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 85 p 12] 9069

CEMENT FACTORY SOCIALIST COMMITMENTS--The collective of the Karadagskiy Cement Factory, fulfilling the decisions of the April and October 1985 CPSU Central Committee plenums and having widely developed competition to achieve high end results, carried out a great deal of work to replace old and outdated equipment in all its shops and thereby created the conditions necessary to fulfill successfully the targets of the final year of the 11th Five-Year Plan. The factory collective pledged to complete the annual plan for production and sale of products ahead of schedule, to manufacture 5,000 tons of cement over the set target and to sell an additional 65,000 rubles worth of products to construction organizations. The collective pledged by extensively introducing scientific and technological achievements, maintaining a high state of discipline and reducing losses of work time, to attain an increase in labor productivity of 1 percent over the plan, reduce production costs by an additional 0.5 percent and obtain 230,000 rubles of profits above those planned. The collective also pledged to achieve savings in 1986 of 1.6 million kilowatt hours of electricity, 1,300 tons of standard fuel and 50 thousand rubles worth of various materials and raw materials. They pledged to work two days using materials, raw materials and fuel which had been saved. [Excerpts] [Baku VYSHKA in Russian 3 Jan 86 p 1] 9069

IMPROVED PRESSURE PIPES DEVELOPED--Scientists from the water supply faculty of the Leningrad Institute of Railroad Transport Engineers imeni V. N. Obrastsov devoted attention to the roughness of the inner walls of reinforced concrete pressure pipes and found that, due to their resistance, 25,000 kilowatt hours of electricity are lost in a single kilometer. The Leningrad scientists, along with scientists from the All-Union Scientific Research Institute of Reinforced Concrete, developed a new composition of concrete additives and found the optimum variant of plasticizing admixtures, which also provide greater pipe durability and save cement. Hundreds of kilometers of pipes with smooth inner surfaces have been produced using the new technology in the Barrikada Association of Glazlenstroyaterialov. Some 110 km of such pipe have been laid in the Leningrad water pipe network, which saves 2.7 million kilowatt hours of electricity each year. [By E. Volovik] [Text] [Moscow IZVESTIYA in Russian 25 Dec 85 p 1] 9069

PRODUCTION ASSOCIATION COMMITMENTS--Workers, engineers, technicians and employees of the Spassktsement Production Association, Primorskiy Kray, fulfilled their plan targets and the Socialist commitments which they made for the 11th Five-Year Plan. The association's collective decided at the start of 1986 to ensure high working tempos and undertook the following commitments: to produce 4,000 tons of cement and 2,000 tons of ground limestone by the opening day of the congress; to work on the day the congress opens using economized materials and fuel and energy resources; to fulfill the 1986 plan ahead of time by intensification of production and raising creative activeness and discipline; to sell 450,000 rubles worth of products above those planned, with the entire increase in volume of production due to increased labor productivity; to manufacture 6 million rubles worth of consumer goods, 50 percent more than in 1985. The collective also pledged, guided by the instructions of the party central committee on accelerating scientific and technological progress, to modernize the two-cement grinders, grate bar coolers and systems for aeration and feeding of rotating furnaces with raw materials; to adopt on them new dosing apparatuses; to construct a gypsum and tuff crushing section; and to accomplish a number of other organizational and technical measures. Through these measures and by strict economizing the collective pledged to save 250,000 tons of fuel; 200,000 kilowatt hours of electricity; 100 gigacalories of thermal energy and to obtain no less than 200,000 rubles worth of profits over those planned. The collective also pledged to reduce work time losses by 20 percent, based on more extensive use of the brigade form of labor organization and on strengthening discipline. [Excerpts] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Dec 85 p 1] 9069

INDUSTRIAL FIRE SAFETY--P. I. Rafa's book, "Fire Safety in Firing Operations," Moscow, Stroyizdat, 1984 is devoted to the problems of preventing fires during production operations associated with the use of open fire, sparking and heating to temperatures capable of igniting materials and structures (electric gas welding and cutting, benzo-kerosene and soldering operations, bitumen and tar cooking, machining of metal with release of sparks). An objective tendency has been observed for increased danger of fire when carrying out firing operations, due to their quantitative and qualitative increase. The author has presented very valuable fire statistics on the results of carrying

out overall firing operations country-wide, as well as specifically by enterprises of the oil refining industry. The causes of fires are indicated. P. I. Rafa described the specifics and peculiarities of welding operations in petroleum, chemical and petrochemical industry facilities, reservoirs, and on ships and construction sites. The advice on organizing training on safety equipment will be useful, especially to those who carry out firing operations or have something to do with them. The book generalizes the experience of conducting lessons according to the fire equipment minimum program. [By N. M. Azarkin, teaching combine instructor] [Excerpts] [Moscow MEKHANIZATSIYA STROITELSTVA in Russian, No. 12, Dec 85, p 27] 9069

ARZAMAS PLANT NEAR GORKIY--Arzamas, Gorkiy Oblast--A new plant to manufacture mineral-wool plates has been put into operation in this city on the eve of the October holiday. The plant's product is denser and is designed for large-panel building construction. The material is much more efficient than the presently used foam plastic. [By I. Utkin] [Text] [Moscow STROITELNAYA GAZETA in Russian 25 Oct 85 p 3] 12595

REINFORCED-CONCRETE PLANT EXPANSION--Birobidzhan--New productive capacity has been put into operation at the Birobidzhan Reinforced-Concrete [ZhBI] Plant of the USSR Ministry of Land Reclamation and Water Resources. Now 65,000 cubic meters of products and structures for land-reclamation construction, as well as parts for large-panel building construction, will come off the plant's conveyors annually. Next year, adjacent to the ZhBI plant, construction of plants to produce claydite gravel and crushed stone will begin. In the future, a structural-steel plant will be built. It is noteworthy that the utilities for these enterprises have already be installed in conjunction with the startup of the ZhBI plant. This will greatly accelerate the construction and reduce the cost of the entire industrial center. [By Yu. Ralin] [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 25 Oct 85 p 3] 12595

AUTOMATED CERAMICS PLANT--Minsk Oblast--Construction of the first phase of the Radoshkovichi Ceramics Plant has begun. The plant will be the equal of the best in the world. The entire production process here will be fully automated, the process equipment will be computer-controlled and industrial television will be widely used. The high-production equipment will ensure that impurities are removed, the clay is carefully ground and the admixtures are evenly distributed. Another important feature is that the plant will produce high-grade 150 and 200 hollow bricks. Preparation for second-phase equipment installation has already begun at the plant. [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 1 Nov 85 p 2] 12595

BRICK TRANSPORT PROBLEMS--According to data from the Central Scientific-Research Institute of Information and Technico-Economic Research on Material and Technical Supply of the State Committee for Material and Technical Supply, losses of silicate brick during bulk railroad transport total 10-12 percent, although it is actually much higher. The labor expenditures for unloading bulk bricks from gondola cars are about six times higher than the labor expenditures for unloading pallets. The unloading delay for railroad equipment and trucks is increasing. [By V.

Sokolov, inspector of the Arkhangel Oblast KNK [as published]] [Excerpts]
Moscow EKONOMICHESKAYA GAZETA in Russian No 35, Aug 85 p 22] 12595

MATERIALS FOR EARTHQUAKE ZONES--(Turkmeninform)--The use of new efficient technologies for composite structural materials will improve the reliability of buildings and facilities in earthquake-prone zones and will raise the level of construction industrialization. The wide implementation of these materials will meet the demands of scientific-technical progress. The problems of starting up these new technologies for composite structural materials were discussed by the participants of a republic scientific-application conference on 15 October in Ashkhabad. Leading scientists and specialists from Moscow, Riga, Kharkov and Odessa took part in the conference. It was no accident that Ashkhabad was chosen as the conference site. Turkmenistan scientists have much experience in developing and implementing efficient construction materials and technologies. Specialists of the Scientific-Research Institute of Earthquake-Proof Construction of TuSSR Committee for Construction Affairs have done great service in this area. They have developed a number of types of composite materials which have been used as the basis for lightweight concrete structures for very seismically active zones. Importantly, scientists have been able to develop many materials based on barkhan sand from the Karakum Desert; the republic has practically inexhaustible reserves of this sand. [Excerpt] [Ashkhabad TURKMENSKAYA ISKRA in Russian 18 Oct 85 p 4] 12595

NEW GYPSUM COMBINE UNDERWAY--In the Dzhambul industrial zone the contours of a new gypsum combine being built by Kazmezhkolkhozstroy have been determined. It will support the republic's inter-kolkhoz construction organizations, both with gypsum and with structures based on gypsum. Yu. Reva, the project chief engineer from the Kazmezhkolkhozproyekt Institute, discusses what this production complex will be: "First the gypsum plaster factory which is already under construction will enter operation. Its capacity is 100,000 tons per year. Then it is planned to create a shop to produce 150,000 square meters of gypsum board for dividing walls and hollow blocks, which will replace 20 million bricks. Finally, a shop will be built to produce large blocks for residential facilities made from gypsum lime-slag binding mix. Annually up to 3,000 tons of electrophosphorous slags from the Novodzhambulsk phosphorous factory will be used to produce the planned 60,000 square meters of structures. Using the byproducts from this enterprise solves an important task of utilizing secondary raw materials in improving the environment. Slag desiccation will be produced during the grinding process in a non-cement binding materials shop, the construction of which is underway not far from Dzhambul. To the traditional uses of gypsum -- decorative, spackling and sound and heat insulation -- new uses will be added in the near future. Support structures and various blocks and panels for low story rural construction will be manufactured from materials based on gypsum. [by R. Sokolovskiy] [Excerpt] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 23 October 85 p 2] 9069

RELIABLE LASER POWER SUPPLY--One problem with the new laser surveying systems is that the storage batteries often fail. Associates of the Orgtekhstroy Institute of Glavredazirsovkhozstroy, who have been working to implement laser systems in ground-leveling and canal-building work, have proposed that the storage batteries be replaced by a regulator powered by a tractor generator. When the generator load current changes, the average value of rectified voltage and the pulsation coefficient change. In order to make the load voltage independent of changes in these parameters, a simple voltage regulator can be added to the photosensor electrical circuit of the T-130 tractor. [Excerpt] [Moscow STROITELNAYA GAZETA in Russian 25 Oct 85] 12595

PROBLEMS AT CEMENT PLANT--Since 1979, the Semipalatinsk Cement Plant has lagged in plan fulfillment and has been constantly subjected to various criticism for not fulfilling its plans. The main reasons for the plant's unsatisfactory performance are the extremely low level of mechanical reliability of the main process equipment, the first phase of which was put into operation in 1958, and the enterprise's poor fuel supply (the supplier is Kuzbassuglesbyt). The annual shortfall in gas-coal supply according to the allocated funds is 25,000-58,000 tons; the incoming fuel does not meet the design grades, disrupting the normal process of clinker roasting and the output of high-quality cement. The unsatisfactory coal-supply situation is greatly complicated by the unreliable mechanical equipment. The enterprise administration has been raising the question of equipment modernization with higher authorities since 1975. Three process lines with rotary kilns 3.6/3.3/3.6 x 150 m in size have been in operation for 27 years and urgently need to be reconstructed. The plant presently has the equipment for a 4 x 150-m kiln worth 1.9 million R, but due to a lack of capital-investment funds, the installation of the kiln has been indefinitely delayed by the USSR Ministry of Construction Materials Industry. Modernization and reconstruction of our plant would result in the fulfillment and overfulfillment of our state plan. But despite our present shortcomings, we are not sitting on our hands: in May 1985 the plant produced 4000 tons of clinker above the plan, while the June plan was 100 percent fulfilled. Our collective is now preoccupied with the successful fulfillment of the 1985 tasks, in order to mark the 27th party congress in a worthy manner. [By M. Beysenbayev, head rotary-kiln operator, Semipalatinsk Cement Plant, deputy of the KaSSR Supreme Soviet, Hero of Socialist Labor] [Excerpts] [Leningrad TSEMENT in Russian No 9, Sep 85 p 23] 12595

NEW HIGH-STRENGTH STEEL--Specialists have developed a steel for manufacturing spare parts for bulldozers of 100-620 hp to replace parts purchased abroad. The steel is recommended for all economic sectors which produce high-strength and wear-resistant parts for high-power construction and road-building equipment designed for northern service. The high-strength wear-resistant steel was developed by the sector scientific-research laboratory at the Zaporozhye Machine Building Institute imeni V. Ya. Chubar. The work has received state registration number 01820077180. [Excerpt] [Moscow STROITELNAYA GAZETA in Russian 25 Oct 85 p 3] 12595

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